

April 9, 2003

CERTIFIED MAIL
7099 3400 0016 8895 6160

Jay Marshall, Resident Agent
Utah American Energy Inc.
P.O. Box 986
Price, Utah 84501

Re: Modifications needed for: New Permit Application, Lila Canyon Extension,
UtahAmerican Energy, Inc. (UEI), Horse Canyon Mine, C/007/013-PM02B-2,
Outgoing File

Dear Mr. Marshall:

The Division has completed a second technical review of your permit application package for the Lila Canyon Extension to the Horse Canyon Mine. In addition, we have met with you and discussed our second review and continued findings of deficiency. This review shows only minor advances in addressing prior deficiencies.

A copy of the Technical Analysis (TA) is enclosed which outlines the Division's findings with regard to technical adequacy. The TA is the Division's written determination, under Utah rule R645-300-131.100. The Division hereby notifies you that your application requires modification and is not considered to be technically adequate due to a number of deficiencies which still exist. These deficiencies must be corrected prior to our granting approval.

Sincerely,

Mary Ann Wright
Associate Director, Mining

Page 2
Jay Marshall
April 9, 2003

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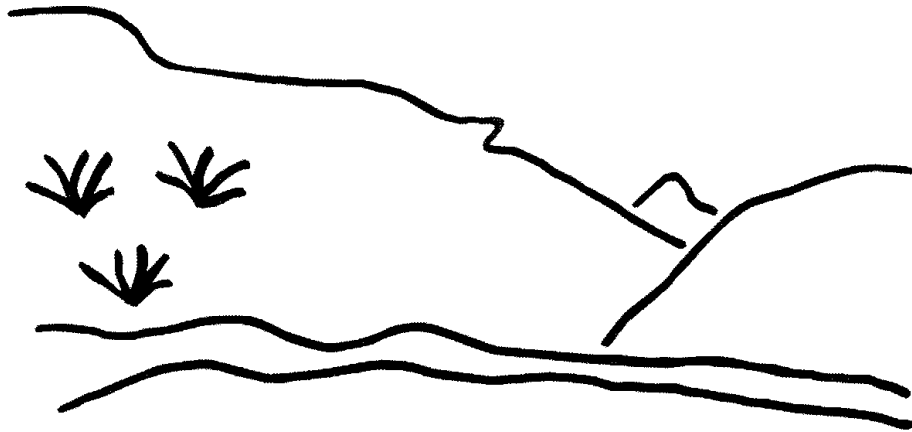
Enclosure

cc:

Clyde Burrell w/o
Denise Dragoo, w/o
Stephen Bloch (Certified Mail 7099 3400 0016 8895 6146)
Kathy Weinberg, Esq. (Certified Mail 7099 3400 0016 8895 6153)
Jim Kohler, BLM w/o
Jim Fulton, OSM w/o
Ranvir Singh, OSM w/o
Patrick Gubbins, BLM w/o
Natalie Gochnour, Gov. Planning & Budget w/o
Robert Morgan, DNR w/o
Tom Faddies, SITLA w/o
Mark Shurtleff, UAG
Josiah Eardley, w/o
David Levanger, Carbon County Planning & Zoning w/o
Bryant Anderson, Emery County Planning & Zoning w/o
Allan Mashburn w/o
Price Field Office

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State of Utah



Utah Oil Gas and Mining

Coal Regulatory Program

Horse Canyon Mine
Lila Canyon Extension
C/007/013-PM02B-2
Technical Analysis
April 8, 2003

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TECHNICAL ANALYSIS

The Division ensures compliance with the Surface Mining Control and Reclamation Act of 1977 (SMCRA). When mines submit a Permit Application Package or an amendment to their Mining and Reclamation Plan, the Division reviews the proposal for conformance to the R645-Coal Mining Rules. This Technical Analysis is such a review. Regardless of these analyses, the Permittee must comply with the minimum regulatory requirements as established by SMCRA.

Readers of this document must be aware that the regulatory requirements are included by reference. A complete and current copy of these regulations and a copy of the Technical Analysis and Findings Review Guide can be found at <http://ogm.utah.gov/coal>

This Technical Analysis (TA) is written as part of the permit review process. It documents the Findings that the Division has made to date regarding the application for a permit and is the basis for permitting decisions with regard to the application. The TA is broken down into logical section headings which comprise the necessary components of an application. Each section is analyzed and specific findings are then provided which indicate whether or not the application is in compliance with the requirements.

Often the first technical review of an application finds that the application contains some deficiencies. The deficiencies are discussed in the body of the TA and are identified by a regulatory reference which describes the minimum requirements. In this Technical Analysis we have summarized the deficiencies at the beginning of the document to aid in responding to them. Once all of the deficiencies have been adequately addressed, the TA will be considered final for the permitting action.

It may be that not every topic or regulatory requirement is discussed in this version of the TA. Generally only those sections are analyzed that pertain to a particular permitting action. TA's may have been completed previously and the revised information has not altered the original findings. Those sections that are not discussed in this document are generally considered to be in compliance.

ACRONYMS

ACRONYMS

| | |
|-----------------|---|
| AO | DAQ Approval Order |
| AOC | Approximate Original Contours |
| AML | Utah Division of Oil, Gas and Mining, Abandoned Mined Lands Program |
| BLM | United States Bureau of Land Management |
| BOR | Bureau of Reclamation |
| CHIA | Cumulative Hydrologic Impact Assessment |
| DAQ | Division of Air Quality |
| DEQ | Department of Environmental Quality |
| DOGM | Utah Division of Oil, Gas and Mining |
| DSH | Strych fine sandy loam variant, 3 to 8% slope |
| DWQ | Utah Division of Water Quality |
| DWR | Utah Division of Wildlife Resources |
| Division | Utah Division of Oil, Gas and Mining |
| EA | Environmental Assessment |
| ECDC | East Carbon Development Corporation |
| EIS | Environmental Impact Statement |
| IPA | Intermountain Power Agency |
| JBR | JBR Environmental Consultants Inc. |
| MDC | Minerals Development Corporation |
| MRP | Mining and Reclamation Plan |
| MSHA | Mine Safety and Health Administration |
| NRCS | Natural Resources Conservation Service |
| OSM | Office of Surface Mining |
| PAP | Permit Application Package |
| PE | Registered Professional Engineer |
| PHC | Probable Hydrologic Consequences |
| PHDI | Palmer Hydrologic Drought Index |
| R2P2 | Resource Recovery and Protection Plan |
| RCRA | Resource Conservation and Recovery Act |
| RDCC | State of Utah Resource Development Coordinating Committee |
| SBG | Strych bouldery fine sandy loam, 5 to 15% slopes |
| SCS | Soil Conservation Service |
| SHPO | State Historic Preservation Office |
| SITLA | School and Institutional Trust Lands Administration |
| SMCRA | Surface Mining Control and Reclamation Act |
| SUALG | Southeastern Utah Association of Local Governments |
| SUWA | Southern Utah Wilderness Alliance |
| TA | Technical Analysis |
| TDS | Total Dissolved Solids |
| TSS | Total Suspended Solids |

ACRONYMS

UEIUtahAmerican Energy, Inc.
UPDESUtah Pollutant Discharge Elimination System
USDIUnited States Department of Interior
USFWSUnited States Fish and Wildlife Service
USGSUnited States Geological Survey
VBJStrych very bouldery fine sandy loam, 5 to 15% slope

INTRODUCTION

INTRODUCTION

On February 11, 2002, the Division received a request for Lila Canyon extension (PM02B) of the Horse Canyon Mine Permit C/007/013. The Division received additional information that supplemented the application on April 25, 2002. An informal conference was held on May 21, 2002 to discuss concerns from SUWA. A second Technical Analysis was sent by Division on July 19, 2002. UEI's response to the second Technical Analysis was received on December 6, 2002.

The Horse Canyon Mine is in the Book Cliffs coalfield in Emery County near East Carbon and Sunnyside, Utah. The topography of Horse Canyon and Lila Canyon are shown on the Cedar and Lila Point 7.5 Minute Quad maps, produced by the Geological Survey of the U.S. Department of the Interior, 1985.

The location of the Lila Canyon Extension is the western slope of the vast and largely undeveloped Tavaputs Plateau. The proposed area of development includes some areas that are designated as Wilderness Study Areas and some designated as Wilderness Inventory Areas. The proposed Lila Canyon portal site lies just five miles from State Highway 6 and is immediately adjacent to an "unimproved" road (Plate 1-1).

The existing Mining and Reclamation Plan (MRP) for Horse Canyon is referred to as Part A and this application for Lila Canyon Extension is referred to as Part B. The permit area for Horse Canyon Part A is 1,327.75 acres and the proposed permit area for Lila Canyon Extension Part B is 4,664.32 acres. The combination of Horse Canyon Part A and Lila Canyon Extension Part B would bring the total new permit area to 5,992.07 acres. The application for the Lila Canyon Extension is classified as a significant revision. The review process for a significant revision is the same as the review process for a new permit application.

The Lila Canyon Extension (Part B) site has a southwest aspect at the base of the Book Cliffs. The pediments are composed of sandstone over shale with a prevalence of cobbles, stones and boulders. It is an erosional environment. The soil receives protection from surface rocks, vegetation and biologic soil crusts.

Salt desert shrub and juniper are the predominant vegetative communities.

SUMMARY OF DEFICIENCIES

SUMMARY OF DEFICIENCIES

The Technical analysis of the proposed permit changes cannot be completed at this time. Additional information is requested of the Permittee to address deficiencies in the proposal. A summary of deficiencies is provided below. Additional comments and concerns may also be found within the analysis and findings made in this Draft Technical Analysis. Upon finalization of this review, any deficiencies will be evaluated for compliance with the regulatory requirements. Such deficiencies may be conditioned to the requirements of the permit issued by the division, result in denial of the proposed permit changes, or may result in other executive or enforcement action and deemed necessary by the Division at that time to achieve compliance with the Utah Coal Regulatory Program.

Accordingly, the Permittee must address those deficiencies as found within this Draft Technical Analysis and provide the following, prior to approval, in accordance with the requirements of:

Regulations

- R641-301-761**, The Permittee shall submit reclamation maps to conform to the changes identified in the technical analysis. 169
- R645-300-121.150**, The Permittee must provide public notice of the intention to conduct mining within 100 feet of the outside right-of-way of the public roads and timing and duration of closure during installation of a culvert in the existing public road. 24
- R645-301-116.100**, The Permittee must clearly state the anticipated number of acres of surface disturbance to be affected during the life of the mine and statements of the number of disturbed acres must be consistent within the PAP. 33
- R645-301-120**, Clearly define and map (on Plate 4-1) all of the mining structures and the partial road (R645-301-121.200). 58
- R645-301-120.122**, The PAP states that the last observed water elevations are on Plate 7-1 (Section 724.199, p. 11). The 5,870 feet water elevation in the Horse Canyon Mine that is shown on Plate 7-1 was determined from underground work performed by BXG in 1993. This BXG work is briefly discussed in the PHC (Appendix 7-2, p. 8) but not in Section 724.100, so this reference to the “last observed water elevations” - without giving the 1993 date - at the

SUMMARY OF DEFICIENCIES

end of the paragraph discussing the 1986 measurement at the rotary car dump in Section 724.100 (p. 11) is confusing. The conclusion that water levels haven't changed since mine operations ceased (Section 724.199, p. 11 and Appendix 7-3, p. 9) is also questionable without including the BXG data in the discussion. Information on the BXG exploration needs to be added to Section 724.100. 68

R645-301-120.122, The PAP states in Section 724.100 on page 6 that there are no observable discharge points in the lower Blackhawk Formation, and on page 9 that there are no springs below the Price River Formation. It states in section 731.520 that no water issues from the strata above or below the coal outcrop (although this is not clear - this statement may refer only to the area immediately around the proposed portals). The springs in Stinky Spring Canyon issue at the contact of the Blackhawk Formation and Mancos Shale, so these statements need to be updated, corrected, or otherwise clarified. 68

R645-301-121, Present raptor information clearly. The Permittee must (1) Update information on peregrine falcon (2) Provide a current and complete list of TE species (3) Provide accurate information pertaining to raptor surveys: Correct nest number on the raptor map in Appendix 3-5 and map - Plate 3-1; Add 2002 survey date (4) Remove unrelated entries in Appendix 3-5: 1980 DWR letter on raptors; 1990 Letters; 1990 Raptor survey. 51

R645-301-121, Provide the following changes to make the revegetation success standards of this PAP more clear and concise: (1) Reclassify fringed sage as a shrub rather than a forb (Table 3.4/3.5) (2) Remove the comment concerning species and ratios will be determined by BLM and DWR. (General Requirements) (3) Remove or provide citation for comments concerning Russian Thistle (4) Clarify the repeated paragraph from section 357.321 through 357.324 (5) Clarify section 357.332 on animal control (6) Clarify sections 356.231-.233 (7) Remove the letter in Appendix 3-3 (8) Clarify all the misguided references in this PAP. See specifics in the table provided in the Standards for Success section of this TA. 175

R645-301-121, The PAP (Section [Sec.] R6450301-320) infers that all vegetation resources of the entire Lila extension are included. Information needed to predict the potential for reclamation, however, is either missing or is not presented clearly. To present required information more clearly, the Permittee should: (1) Omit Appendix 3-1 and 3-2 because: Information does not directly and entirely relate to permit area; Reports have missing pages, plates, appendices, and tables; Information on community types in text does not directly match those shown on Plate 3-2; Reports do not include exact locations of survey sites; Reports do not cover riparian areas; Data is outdated (2) Clarify Appendix 3-2A (unless omitted): Clarify appendix numbers to read 3-2, 3-2A₁, and 3-2A₂; Clarify cover sheets; 3-2A₁: Provide survey dates of the vegetation inventory; 3-2A₁: Provide accurate and corresponding representations of the plant communities in the Vegetation map (Plate 3-2), Figure 1 of Appendix 3-2A, and Tables 1 and 2; 3-2A₁: Document whether or not *Chrysothamnus viscidiflorus* is found in the disturbed and reference areas; 3-2A₁: Describe why the map (Fig. 1) shows over 50 survey sites, yet text describes only 15; 3-2A₁: Remove inconsistencies between Tables 1 and 2 and

SUMMARY OF DEFICIENCIES

text; 3-2A₁: Correct unknown or misspelled plant species; 3-2A₂: Describe the value for the percent cover survey of the pinyon juniper community; 3-2A₂: Justify the reason why surveying in November for percent cover is acceptable **(3)** Clarify Appendix 3-4: Provide survey site locations for the TE and productivity studies (Appendices 3-4 and 3-7); Provide correct year in the August 2002 survey submittal; Provide missing 1999 TE survey mentioned in May 2002 study; Provide survey site locations for the productivity studies (App. 3-7). 42

R645-301-121.200 The Permittee shall reevaluate the PAP to give specific, detailed information to address and substantiate comments under each regulation..... 28

R645-301-121.200, It states in Section 731.211 that there is a total of 17 ground water monitoring sites proposed for this property, and refers to Table 7-3. Including mine-water discharge at L-5-G and the IPA piezometers, Table 7-3 shows only 13 ground-water monitoring sites. This needs to be clarified. 151

R645-301-121.200, -724.300, Information in Table 5 (Chapter 7) on the strata from which springs flow does not match statements throughout the PAP and does not match the information on Plates 6-1 and 7-4: there is no separately identifiable Flagstaff formation in this area, and according to Plates 6-1 and 7-4, L-10-G and L-12-G issue from the North Horn Formation..... 88

R645-301-121.200, Clarify the inconsistency between the EA and PAP documents concerning archaeological site 42EM2517 and provide supporting evidence in the form of official documentation for the PAP statement of non-eligibility. 35

R645-301-121.200, Clarify the inconsistency between the paragraph on page 9 and habitat representation on Plate 3-1..... 124

R645-301-121.200, Remove the incorrect and contradictory statement “Considering the low population density and the abundance of suitable similar habitat this impact appears to be minuscule” (pg. 9)..... 124

R645-301-121.200, The first page of the 1989 Water Monitoring Data in Appendix 7-2 is illegible, and the Permittee needs to provide a legible copy. If a better original version is not available for reproduction, the Permittee should redo the table so the information is usable. . 89

R645-301-121.200, The Permittee must update section 526.116 of the PAP to state that in addition to the office complex and sediment pond the topsoil storage area and security building are also within 100 feet of County Road 126. 106

R645-301-121.200, The Permittee needs to clarify statements in Section 724.100 (page 9) that no springs occur in or below the Price River Formation or Castlegate Sandstone are not accurate; although there may be no large springs below the Price River Formation, the seeps in Stinky Spring Wash issue at the contact of the Blackhawk Formation and Mancos Shale. 89

SUMMARY OF DEFICIENCIES

- R645-301-121.300**, The Permittee needs to better integrate the existing Horse Canyon Mine MRP and the Lila Canyon Extension PAP into a more clear, concise, and unified set of documents. 25
- R645-301-121-200**, (1) Plate 5-7A-2 refers to Plate 2-4 which does not exist (2) Section 232.500, page 13 of Chapter 2, the Salvageable Soils Map in Appendix A-2 is more easily found if cited as Appendix A-2 of Appendix 2-3. 128
- R-645-301-122, -725**, Referenced materials are to be provided to the Division by the Permittee or be readily available to the Division. The Kaiser South Lease PAP should be appended to the Lila Extension PAP or otherwise be made available to the Division to use in preparing the TA and CHIA..... 28
- R645-301-130**, In Section 724.100 (p.11), “(personnel communication, 1990)” is given as a reference, but the individual is not identified. Is this a direct quote from the Horse Canyon Mine plan? The Permittee needs to provide the name of the individual who provided this information..... 90
- R645-301-130**, Include in PAP the qualifications of the consulting soil scientist. 28
- R645-301-130**, The PAP must contain the names, organizations, and qualifications of all contributors who conducted the following surveys(1) Vegetation Study Horse Canyon; App 3-1 (Unless omitted - see Vegetation Resource Information R645-301-121.100) (2) Vegetation Study South Lease Area; Kaiser Steel; App 3-2 1 (Unless omitted - see Vegetation Resource Information R645-301-121.100) (3) TE Inventories; App 3-4 (#1-4, and #6; numbers refer to table above) (4) MSO flyover survey (5) Raptor Surveys; App 3-5 (6) UDWR Wildlife Report; App 3-6 (7) Productivity Within And Around The Permit Area; App 3-7..... 28
- R645-301-222.400**, The Permittee should provide baseline soils analyses of total nitrogen and available phosphorus for the six soil map units. 56
- R645-301-234.230**, Application of cryptogams to the surface of the topsoil pile should include a test of the proposed method of application of cryptogams during final reclamation. i.e. crushing and sieving the soil and cryptogam colonies and adding them to the hydrospray of mulch..... 128
- R645-301-243**, The PAP should indicate that sampling of the stored topsoil will be from the middle and bottom of the stockpile..... 168
- R645-301-321.100**, Conduct a new vegetation survey. A qualified person in the field of plant taxonomy and quantitative ecology must conduct the survey and analysis according to the Division’s Vegetation Information Guidelines. Perform vegetation sampling during a time of greatest species diversity, preferably in late spring. Provide raw data sheets. Clearly define the disturbed and reference area communities. Include biologic soil crusts in the vegetation

SUMMARY OF DEFICIENCIES

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| sampling. Before sampling, the Division must review more thoroughly the proposed location of the reference area..... | 43 |
| R645-301-322(.000-.200) , Address how the mining effects to Range Creek will affect the southwestern willow flycatcher at Range Creek..... | 52 |
| R645-301-322(.000-.200) , Provide the following: (1) Habitat impact assessments for the bald eagle (2) Quantitative water consumption impact assessment for bonytail chub, Colorado pikeminnow, Humpback chub, and razorback sucker. (R645-301-333; see below) (3) Occurrence surveys and habitat impact assessments for the San Rafael cactus, Creutzfeldt cryptantha, and Canyon sweetvetch (4) Suitable habitat assessments for the TE and sensitive plant species..... | 52 |
| R645-301-322 , Append the modified plan in Appendix 3-4 to include the Division's requests for conducting and reporting the MSO surveys. Conduct occurrence surveys, habitat impact assessments, and suitable habitat assessment. | 51 |
| R645-301-322 , Describe the riparian habitat, and amphibian presence or the potential for amphibian occurrences for all springs and seeps. Submit all results and summary in the PAP. | 52 |
| R645-301-322.100 , The entire area that may be affected and adjacent areas must be surveyed for raptors. The southwest section of the permit area appears as suitable cliff habitat. This area is outside the subsidence buffer zone but within the permit area and immediately adjacent to the buffer zone. Other rock outcrops are within the permit area and require surveys. Conduct a thorough survey during the 2003 (and subsequent-years) raptor survey of the southwest quadrants as well as other rock outcrops within and near the permit area. | 51 |
| R645-301-323 , Provide a brief description characterizing the resources that occur in or near the permit area for each of spring. | 43 |
| R645-301-323 , Provide accurate vegetation map(s): (1) Include all plant communities (shale and escarpments are not plant communities) (2) Show accurate dimensions and aspects of the communities (3) Detail areas around springs and seeps (4) Include the reference site (5) Submit two vegetation maps – one that shows the entire permit B area and one that details the reference and disturbed areas..... | 43 |
| R645-301-323.400 , The PAP must describe all plant communities, including those occurring near seeps and springs..... | 43 |
| R645-301-332 , The effects of subsidence on the seeps found in the unnamed canyon in the southwestern corner of the permit area must be addressed. As a valuable wildlife resource, these seeps must be protected from loss. Other effects of subsidence must also be discussed | |

SUMMARY OF DEFICIENCIES

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| particularly in areas with less than 1000 feet of cover. The effects to snakes and other wildlife species must be addressed..... | 124 |
| R645-301-333 , Address the potential for increased selenium and perhaps commit to monitor at the point of discharge into the Price River should waters ever reach that point..... | 123 |
| R645-301-333 , The PAP must include a quantitative water consumption impact assessment for the endangered fish of the Upper Colorado River Basin and methods of minimizing those effects..... | 123 |
| R645-301-341.210; R353; R356.210; R356.231 , Provide the tentative seedling species names, planting rate, and ratios..... | 175 |
| R645-301-341.300 , Adjust the warm and cool season species test plot to include four “quadrants” instead of two..... | 175 |
| R645-301-342.230; R353.120 , The final reclamation seed mixture must be modified to replace the diversity found on site..... | 176 |
| R645-301-356.100 , Consult with the Division to relocate the reference area prior to any surface disturbance. | 176 |
| R645-301-356.231 , Remove “1500 woody plant per acre” statements concerning establishment. The Division must consult with area agencies and authorize the stocking number. | 176 |
| R645-301-358.100 , Discuss that the environmental coordinator must first report a finding of a TE species to the Division before any actions are taken. | 176 |
| R645-301-358.400 , Address concerns listed in this regulation about habitat, specifically the springs. | 176 |
| R645-301-358.400; R521.141; R526.222 , Protect the drainage immediately south of the disturbed area from construction. This drainage is used by wildlife as a transportation corridor. It is not obvious to the Division that the mine needs to disturb this area when there are islands of undisturbed areas on the pediment. | 124 |
| R645-301-358.510 , Provide structural information and map layout of power poles and | 52 |
| R645-301-411.140; R301-122 , The Permittee must provide the following (1) Miller (1991) archaeological survey, cited by the EA (2) Southworth and Nielson (1986) archaeological survey, cited in the PAP Section 301-411-140, page 11..... | 35 |
| R645-301-411.143 , Present, on Plate 4-3, all archaeological inventoried sites located on or near the permit area..... | 35 |

SUMMARY OF DEFICIENCIES

- R645-301-521.111 and R645-301-121.300**, The Permittee must list the line type for the exploration entries in the legend of Plate 5-1. 98
- R645-301-521.111**, The Permittee must list all known mine workings in, and adjacent to, the permit area. The Division found mine workings in the area listed in Doelling that the Permittee did not show on Plate 5-1. The Permittee should show those workings or state why they did not list them..... 98
- R645-301-521.121 and R645-301-121.200**, In the text of section 521.121 and all subsections and related maps the Permittee must identify only the surface and subsurface man-made features that exist on the site prior to the permit being issued..... 99
- R645-301-521.123 and R645-301-121.200**, In the text of section 521.123 of the PAP and on all relevant maps, the Permittee must identify all public roads that exist in, and within 100 feet of, the permit boundary. In section 521.123 of the PAP, the Permittee only refers to County Road 126 as being within the proposed permit area. Yet, in Appendix 5-4 the Permittee explains in detail the existence of Little Park Road and some other public roads within the permit area. To avoid confusion, the Permittee needs to show and label the full right-of-way for County Road 126 and all other public roads on a map that deals with conditions that exist before the permit being issued. To be clear and concise the Permittee should show the road information on two maps, one map for the entire permit boundary and the second for the disturbed area boundary. Note that preexisting structures in the operations section of the TA refer to structures on which construction began before January 21, 1981. 98
- R645-301-521.124**, The Permittee must show the location of the structural fill and refuse disposal areas on the cross sections on Figure 1 Appendix 5-7..... 139
- R645-301-521.125 and R645-301-121.200**, In the text of section 521.125 of the PAP, and on all relevant maps, the Permittee must identify all existing sediment ponds, permanent water impoundments, coal processing banks, and coal processing waste dams and embankments. In section 521.125 of the PAP, the Permittee mentions the proposed sediment pond. Since the proposed sediment pond is just that, proposed, the statement is confusing. The Permittee must list only those dams and impoundments within the proposed permit area that exist prior to the permit being issued 98
- R645-301-521.141 and R645-301-116.100**, The Permittee must identify all subareas for which additional permits may be sought over the life-of-mine. That information must be shown on maps and in the text of the PAP. In Section 521.141 of the PAP the Permittee only refers to the life of the permit which is 5 years. This issue is also addressed in the maps, plans, and cross-sections of resources information section of the TA. Examples of future expansion include but are not limited to southward expansion for additional coal reserves and expanding the disturbed area for a future discharge point. Due to the size of the two areas, the potential expansion areas must be shown on maps of adequate scale. 33

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| R645-301-521.150 and R645-301-521.190 , The Permittee must show the pre-existing contours on Plate 5-1A as intervals of 5 feet or less. The Division needs the information to establish the pre-existing site conditions. | 98 |
| R645-301-521.150, and R645-301-121.200 , To avoid confusion the Permittee should not show elevations to the nearest 1,000 th of a foot. See analysis section for more details. In addition, the Permittee must label the red hash marks on cross-section 5-7A-2 and similar maps and cross-sections. | 156 |
| R645-301-521.150 , The Permittee must show the correct surface elevations and configurations on all operational maps. The Permittee must show how they will cover the refuse pile with fill before construction of the buildings. In addition, the Permittee must show that the area where they will construct buildings is flat. | 156 |
| R645-301-521.190 and R645-301-121.200 , The Permittee must designate one map as the official disturbed area boundary map and state which map it is in the text of the PAP. | 99 |
| R645-301-522 and R645-301-521.190 , The Permittee must show the logic mining unit boundaries on Plate 5-4 or an equivalent map. The Division is aware that the permit boundaries and the LMU boundaries overlap so showing both on the same map could be difficult. | 109 |
| R645-301-522 , The Permittee must discuss the potential for expanding the mine. The Division is interested in future plans for expanding to the south and east. | 109 |
| R645-301-525.110 , The Permittee must show the precise location of each seep, spring, stock pond, existing water right and dirt road on Plate 5-3. Note that the information on Plate 5-3 is inconsistent with that of Plate 7-3. See the analysis section for more details. | 117 |
| R645-301-525.120 and R645-301-121.200 , The Permittee must define the blue dot symbol on Plate 5-3. | 117 |
| R645-301-525.130 and R645-301-121.200 , The Permittee states in section 525.130 that they do not entirely agree that R645-301-525 requirements should apply. The Division is unaware of any options that the Permittee has about the need to comply with the R645-301-525 regulations. The Permittee must discuss those issues in the PAP. The discussion in Chapter 7, Section 727 is inadequate to comply with R645-301-525.130 and R645-301-121.200. | 117 |
| R645-301-525.130 , The Permittee must show that all property owners in, and around, the Lila Canyon tract, as well as the water conservancy district received copies of the water rights survey. | 117 |

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- R645-301-525.400**, The Permittee must list the possible sources and methods to replace State-Appropriated water supplies that subsidence may damage. The Permittee needs to determine what replacement sources are available and how they will implement them. 117
- R645-301-526.115.4 and R645-301-526.116.1**, The Permittee must show 1) what section of the culvert the County will install and what part the Permittee will install, 2) during reclamation, what work will be done by the County regarding modification of the culvert. The Division assumes that when the undisturbed bypass culvert is removed, modifications to the culvert will include a fluted inlet and the placing of riprap on the surrounding slope..... 104
- R645-301-526.220, R645-301-521.161, R645-301-521.190 and R645-301-300.121.200**, The Permittee must show the location of each surface facility on Plate 5-2, or an equivalent map. To avoid confusion and to insure that all surface facilities and utilities are shown the Permittee will number all facilities and utilities, a list of the numbered facilities and utilities will be shown in the engineering section of the PAP, on Plate 5-2 and in the bond calculation section of the PAP. 153
- R645-301-527.210 and R645-301-121.200**, The Permittee must either include Figure 6 in Appendix 5-4 or remove reference to that figure..... 133
- R645-301-527.210, R645-301-527.220 and R645-301-527.230**, The Permittee needs to give the Division detailed maps and cross-sections that show how the South Fork of the Lila Wash will be protected from mining activities, especially from the Main Facility Road, which is located 10 feet from the drainage. 133
- R645-301-527.210**, The Permittee must give the Division detailed designs for each road that will be constructed in the disturbed area. A general commitment to provide the Division with additional engineering designs is inadequate. If the Permittee needs more time to develop road designs then they should wait until the designs are complete before submitting the PAP. At a minimum, the Permittee must give the Division detailed designs for both the Main Mine Road, and the Portal Access Road. The information in the text and that in Appendix 5-4 are contradictory. See analysis section for details. 133
- R645-301-527.230**, The Permittee must show that trucks and other vehicles they will use during the construction, use, and reclamation of the portal will have enough room to turn around and be loaded, or they must modify the portal access road design..... 133
- R645-301-534**, The Permittee must state how they will modify the county road that lies within the disturbed area boundary during reclamation. Specifically, the Division wants to know how the Permittee will modify the culvert, and how the surface will be stabilized 169
- R645-301-534.130**, The Permittee must include a safety factor analysis for all the roads in the disturbed area or show why they are not needed. The Permittee must also include summary sheets from the computer printouts..... 133

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- R645-301-542**, The Permittee will submit reclamation maps portraying reclamation at Phase I to illustrate the reclaimed surface area configuration after all mining structures are removed, and at Phase II to illustrate the reclaimed surface area configuration after all hydrologic structures are removed..... 178
- R645-301-553**, The Permittee must describe the location of cut slopes that will be left after final backfilling and grading. The Permittee will also explain why those cut slopes will be left. For example, the Permittee could discuss stability issues (see analysis section for details)..... 166
- R645-301-553.252**, The Permittee must explain what contaminants will be monitored in the stored subsoil and how the monitoring will take place..... 128
- R645-301-622, -722**, Resource maps showing water rights, need to be extended at least as far as the channel of Range Creek to help evaluate potential impacts in the Range Creek drainage. 99
- R645-301-622, -722**, Water rights 91-4959 (Redden Spring), 91-183 (Horse Canyon Creek), and 91-185 (MDC well), all held by UtahAmerican Energy, are not shown on Plate 7-3..... 99
- R645-301-721, (1)** The Permittee shall submit a surface monitoring plan to survey all streams and channels in, and adjacent to, the permit area. The Permittee shall identify and describe all water resources within the drainage basins and potential impacts to the resource and downstream users. The Permittee will collect and evaluate quantitative and qualitative data for all surface water sources. The survey will establish baseline information and trends for each monitoring site. From the data, the Permittee will characterize the surface waters in, or adjacent to, the permit area as perennial, intermittent, or ephemeral. The Permittee can provide survey information to characterize surface waters if weather conditions and access prevent the collection of reliable monitoring data **(2)** The Permittee shall provide specific stream characterization information in a table and illustrate the reaches on a map. The table shall identify the length of the reaches classified and other quantitative and qualitative information defining the reach. The Permittee can base classification on water table elevations (with respect to channel surface) and biologic (plant and aquatic) communities present. The Permittee will classify stream reaches or segments according to the type (perennial, intermittent or ephemeral) established in the definitions under R645-301-100 **(3)** The Permittee should make descriptive adjustments based on the life of the mine to describe unusual wet or dry periods that may confound average rainfall and runoff conditions. The Permittee will conduct representative monthly sampling for all perennial sources and monitor for parameters as per Table 7-4, as committed to in the application, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee will conduct monthly sampling during periods of flow for intermittent streams and monitor for water quality as committed to in the application, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee will conduct quarterly surveys for ephemeral streams and monitor for water quality as committed to in the

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application, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. 87

R645-301-721, The Permittee shall conduct surveys of streams and channels and describe methods to mitigate potential mining impacts from discharges and subsidence. The Permittee must submit the surveys and mitigation plan before the Division will issue a mining permit. The survey will describe water use, water rights, channel morphology, and likely impacts. The Permittee will describe impacts to channels or perennial streams, or identify the extent (point) where impacts are no longer realized. For mine discharge sites, the Permittee shall model impacts based on flow from 0 to 500 gpm. For channels above mine areas, the Permittee shall identify the probable impacts if subsidence should intercept stream or spring flow, specifically to water rights and downstream uses. The Permittee will describe access and feasibility of mitigation of subsidence impacts to perennial, intermittent, or ephemeral stream channels and how channel restoration could be accomplished. 88

R645-301-722, The Permittee shall show water rights 91-4959 (Redden Spring), 91-183 (Horse Canyon Creek), and 91-185 (MDC well), all held by UtahAmerican Energy, on Plate 7-3. ... 88

R645-301-722, The Permittee will submit a map identifying the characterizing of stream reaches showing where mining will take place within 100 feet (horizontal) of a stream channel. 99

R645-301-722.100, -624.100, (1) The PAP asserts that the Mesa Verde Group (the Price River Formation, Castlegate Sandstone, and Blackhawk Formation) is not an aquifer because: The group does not transmit ground water to supply any water sources; The water has no potential to be used or developed, and it is not elemental to preserving the hydrologic balance in the permit and adjacent area, and; that there are no observable discharge points in the permit and adjacent areas (Section 724.100) **(2)** The Permittee needs to clarify such statements in the PAP on or adjacent to the permit area because the seeps in Stinky Spring Wash, adjacent to the southwest corner of the Lila Canyon Extension area, issue at the contact of the Blackhawk Formation and Mancos Shale. Although these seeps are not a water supply and have limited use, they appear to be an important source of water for Bighorn sheep, specifically in the early spring. Plate 7-1 indicates the source for the water flowing from these seeps could be connected to the saturated zone, evident in the IPA piezometers, that will be intercepted by the proposed mine. The Permittee needs to evaluate the hydrogeology of these seeps, whether their source is regional, intermediate, or local in extent, and what impacts the proposed coal mining might have on them. 90

R645-301-722.100, The Permittee needs to portray seasonal variations of head on contour maps or cross-sections. 88

R645-301-724.100, At least four water level measurements and one suite of water-quality analyses were done at S-32, but there is no information on the current condition of S-32 in the PAP. The Permittee visited this piezometer, attempted to measure water levels, but found S-

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- 32 unusable; this is discussed in the cover letter for the December 6, 2002 submittal, but this information has not been included in the PAP..... 89
- R645-301-724.200, -728.344,** Streams in the Lila Canyon Extension have been monitored since December 2000 and there has been no flow observed except in response to precipitation runoff or snow melt. There are no field data or laboratory reports in the PAP for water quality and quantity for these runoff and snowmelt events. These data need to added to the PAP and used in determining the PHC. 89
- R645-301-724.410,** The Permittee shall identify current information in the evaluation of climatic data. The Permittee shall indicate if the Sunnyside Weather Station is still functioning. 36
- R645-301-724.410,** The Permittee shall provide up-to-date climatological information. 36
- R645-301-727,** Plate 7-3 does not show water rights 91-4959, 91-183, and 91-185, held by UtahAmerican Energy. Contrary to the statement in Section 727, UtahAmerican Energy does not hold the majority of water rights in the Horse Canyon Mine – Lila Canyon Extension area. 90
- R645-301-728, (1)**The Permittee needs to make specific findings for the PHC, which identify potential impacts to all surface water sources. The Permittee shall characterize the channels and flow patterns within each drainage-backed by data, describe all water uses associated with those basins, potential impacts to those uses and describe the total hydrologic impacts to surface water resources on and adjacent to the permit area based on sampling, monitoring, characterization and studies. The Permittee shall use this information to summarize the potential for mitigation and hydrologic impacts on and off the permit area in the PHC. The PHC shall describe all probable hydrologic consequences from subsidence, discharges to stream channels, impacts to channels, sediment loading, salt loading and impacts to aquatic wildlife **(2)** The Permittee shall discuss what impacts will take place from increased salinity to the Colorado River by discharging water from the mine, and especially how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River..... 88
- R645-301-728.333,** There is no PHC determination of what impact the proposed operation will have on flooding and streamflow alteration. The Coal Mining Rules require this determination to be in the permit application, that is, the Permittee must provide this information **before** the permit is issued. 90
- R645-301-728.350.** The PHC states that it is unlikely contamination, diminution, or interruption of any water resources will occur within the permit area (p. 14). The PHC needs to contain an explicit determination regarding contamination, diminution, or interruption of State-appropriated Water; not only for the permit area, but also for the adjacent area. Somewhere in the PAP, preferably in the PHC itself, the Permittee needs to clearly present the basis for this

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determination. If there is a possibility of contamination, diminution, or interruption of State-appropriated Water in the permit or adjacent areas, a water replacement plan under R645-301-525.400 and –525.480 is needed..... 89

R645-301-731, (1) The Permittee will submit design plans for a sedimentation pond to contain and control the runoff from the mine pad area for treatment of the 10 year-24 hour precipitation event falling on the mine pad and treatment of at least a 500 gpm mine water discharge. **(2)** The Permittee will submit design plans of the sedimentation pond showing the discharge area and erosion protection structure for the undisturbed area UA-4 entering the pond..... 150

R645-301-731, Prior to mining, the Permittee will be required to assess the channel morphology and characteristics of channels downstream from proposed UPDES monitoring sites. The Permittee is required to assess the potential impacts of mine water discharges to downstream channels from the discharge site to the Price River. In the PHC, the Permittee will describe the impacts to downstream channels..... 151

R645-301-731, The Permittee shall evaluate and describe all mining activity within 100 feet of a perennial or intermittent stream channel..... 151

R645-301-731, The Permittee shall evaluate the probable impacts from mine discharges and sedimentation pond discharges on receiving channels **before** mining. The Permittee will assess the level of impact contaminants such as dissolved salts, toxic elements (such as boron and selenium), and channel sediments will cause downstream of the permit area to the Price River. The Permittee will submit plans for the mine-water discharge system **before** mining. The plan will specify pipe size to handle at least 500 gpm, routing, discharge area and designs for erosion control at the discharge area. A model using mine water discharges ranging from 0 to 500 gallons per minute shall be evaluated to determine the potential of impacts to the Price River and the fishery. In the PHC, the Permittee shall describe the probable impacts from mine water discharges impacting the Price River and fishery from high mine water discharges, chemical and sediment contamination. 150

R645-301-731, The Permittee shall provide updated facilities maps to show the change in sedimentation pond location, change of the mine discharge system, sedimentation-pond discharge system, disturbed area drainage reconfiguration, and UPDES discharge structures. 156

R645-301-731, The Permittee will consolidate discharge points by routing mine water through the sedimentation pond or, if meeting UPDES limits discharging in the same area as the sedimentation pond discharge. This action should reduce impacts to stream channels and reduce monitoring and reporting of data..... 150

R645-301-731.111, 731.121, Because the PAP uses the Sunnyside Mine as an example of why there is no need to perform further analysis for acid- and toxic-forming materials, the PAP

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needs to better explain how the handling and disposal of coal mine waste at the Lila Canyon Extension is designed to avoid the acid- and toxic-drainage such as occurred at the Sunnyside Mine refuse pile. This is partially explained in Appendix 5-7 – that the refuse pile will not contain reject from coal washing and is to be placed in a pit and covered with 4 feet of subsoil and topsoil rather than left exposed on the surface. The Permittee identified several differences between the Sunnyside and proposed Lila refuse piles in the cover letter for the December 6, 2002 submittal; this information needs to be included in Section 6.5.5.1 of the PAP. 68

R645-301-731.600, The Permittee shall submit maps depicting a 100-foot buffer zone along perennial and intermittent channels. 157

R645-301-830.140, The Permittee must list every proposed structure in the bond calculations, and all revegetation costs 180

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IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

The Permittee, UtahAmerican Energy Inc. (UEI), is a corporation organized and existing under the laws of the State of Utah. UEI is 100% owned by Coal Resources Inc., a subsidiary of Murray Energy. Information submitted under section 112 shows the resident agent as R. Jay Marshall. Abandoned Mine Fees will be paid by Robert Murray. The application indicates ownership and control information in Appendix 1-1 and contains surface and sub-surface ownership information.

Findings:

Information provided in the application meets the minimum Identification of Interests requirements of the Regulations.

VIOLATION INFORMATION

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

Analysis:

A review of Appendix 1-3 Violation Information shows a list of violations from the Permittee and any subsidiary or affiliate of the Permittee. The information contained in Appendix 1-3 has been updated through February 2002. Regulation R645-301-113.300 requires that the application contains a history of violations three years prior to the submittal date.

A prior review of the (AVS) Applicant Violator System showed the state civil penalty of Belmont Coal (OH permit D1020) is coded "C" indicating a settlement, payment plan, or pending challenge. A current review of the (AVS) Applicant Violator System indicates that the action referenced above has been taken care of.

Findings:

Information provided in this section of the application meets the minimum requirements of the regulations.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

The permit area of 5,992.07 acres is shown on Plate 1-1 and Plate 5-4. The permit boundaries are divided into Part A, the Horse Canyon project, and Part B, the Lila Canyon Extension. Table 4-2 breaks out the private, state and federal acreage within Parts A and B of the permit area. Table 4-2A breaks out the private, state and federal acres of coal ownership within Parts A and B of the permit area. There are six federal leases in the permit area. The permit area for Horse Canyon (Part A) is located on page I-20 to I-22. The permit area for Lila Canyon Extension (Part B) is located in Appendix 1-5. The boundaries of the permit area for Horse Canyon (Part A) and Lila Canyon Extension (Part B) are shown on Plate 4-1 Surface Ownership of the Part B application. The different permit boundaries are distinguished by different colors of the specified line type. The Horse Canyon permit area A is described by using the Metes and Bounds system and the Lila Canyon Extension permit area B is described by using the Township Range system.

SUWA commented that the right-of-way is still in dispute before the Interior Board of Land Appeal. The Division recognizes that an appeal of the right-of-way has been filed, but the right-of-way is currently in effect. Should the right-of-way be overturned, the Division would reconsider this issue at such time.

Findings:

The information provided meets the requirements of the Right of Entry regulations.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

The proposed permit area is not within an area designated as unsuitable for mining. UtahAmerican Energy Inc. (UEI) will not conduct mining operations within 300 feet of a currently occupied building. UEI will conduct mining or mining related activities within 100 feet of a public road. UEI has received permission from Emery County to construct facilities and

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conduct mining activities within 100 feet of a public road. The letter of permission is located in Appendix 1-4.

Findings:

Information provided in the application meets the minimum Legal Description and Status of Unsuitability requirements of the Regulations.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The application shows the anticipated starting and termination date of each phase of mining and reclamation operations in Chapter 1, Section 116. The dates indicated may vary since they indicate beginning in June 2002 and the application is still under review at the present time. The Permittee estimates that surface facilities could be constructed in 6 months and that the Lila Canyon Extension will operate for approximately 20 years once the permit is issued.

Findings:

Information provided in the application meets the minimum Permit Term requirements of the Regulations.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

The U.S.D.I. Bureau of Land Management and the U.S.D.I. Office of Surface Mining published an Environmental Assessment of the Lila Canyon Project (EA No UT-070-99-22) in July 2000. The Division received the Permit Application Package on February 11, 2002.

Public notice of the Permit Application Package was placed in the Emery County Progress on February 28, March 7, 14 and 21, 2002. A copy of the newspaper advertisement has been made part of the Mining and Reclamation Plan in Appendix 1.5. In accordance with R645-300-121.100 *et seq*, the notice identifies the name and business address of the Permittee; provides a map showing the Horse Canyon Mine permit area and the adjacent boundaries of the

proposed Lila Canyon extension permit area and identifies the boundaries using Township and Range and Section; and provides three locations for public inspection of the PAP; and gives the name and address of the Division. Also included in the public notice is a concise statement describing the application as an extension to the existing Horse Canyon Mine to be known as Part B Lila Canyon extension, to be processed as a new permit.

During an informal hearing, SUWA commented on the adequacy of the public notice, in particular, questioning the link between the Horse Canyon Mine permit and Part B: Lila Canyon extension. The Division maintains that reviewing the application for Part B: Lila Canyon extension as a new permit follows the requirements of R645-303-222.

Written comments were received from six concerned citizens and two organizations within thirty days of the last publication date of the public notice. The two organizations providing comment were the Southeastern Utah Association of Local Governments (SUALG) and the Southern Utah Wilderness Alliance (SUWA).

An Informal Hearing was requested by SUWA and was held on May 21, 2002 at the Division Office in Salt Lake City. The comments made during the hearing are part of the public record and are referred to throughout this Technical Analysis of the mine permit application package (PAP).

Not included in the public notice was notification of mining within 100 feet of the outside right-of-way a public road (R645-300-121.150).

Findings:

The Permittee has not met the requirements of the Regulations for Public Notice. Prior to approval and in accordance with,

R645-300-121.150, The Permittee must provide public notice of the intention to conduct mining within 100 feet of the outside right-of-way of the public roads and timing and duration of closure during installation of a culvert in the existing public road.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

The PAP is for an extension to an existing permit, but it is largely formatted as a stand-alone document and could be understood to be a separate mine and mine permit from the Horse Canyon Mine. There are baseline data and other information in the Horse Canyon Mine MRP

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that are relevant to the Lila Canyon Extension, but these are not reproduced in the Lila Canyon PAP nor are they adequately referenced.

There are two separate water-monitoring plans; one for the Lila Canyon Extension and another for the Horse Canyon Mine. There is a PHC in the Lila Canyon Extension PAP and another in the Horse Canyon Mine PAP, although the Lila Canyon Extension PHC is basically an update of the Horse Canyon Mine PHC and should suffice for both areas. The Permittee needs to better integrate the existing Horse Canyon Mine MRP and the Lila Canyon Extension PAP into a more clear, concise, and unified set of documents.

Findings:

The Permittee has not met the requirements of the Regulations for Permit Application Format and Contents. Prior to approval and in accordance with,

R645-301-121.300, The Permittee needs to better integrate the existing Horse Canyon Mine MRP and the Lila Canyon Extension PAP into a more clear, concise, and unified set of documents.

REPORTING OF TECHNICAL DATA

Regulatory Reference: 30 CFR 777.13; R645-301-130.

Analysis:

Soils

An Order I Soil Survey was conducted of the proposed Lila Canyon extension disturbed area was conducted in August 1998 by Dan Larsen, Soil Scientist, Environmental Industrial Services, Inc., Helper, Utah.

Biology

Some of the names and qualifications of those participating in Biological Resource data collection, inventory, and analysis are provided in Appendix 3-1 through 3-7.

| Survey | Date | Org/Persons |
|--|----------------------|-----------------------------------|
| Vegetation Study Horse Canyon; App 3-1 | 1983 & 1985 | Official names not provided |
| Vegetation Study South Lease Area; Kaiser Steel; App 3-2 | Growing season: 1982 | Official names not provided |
| Lila Canyon Vegetation Inventory; | Growing seasons: | Environmental Industrial Services |

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| App 3-2A | 1998, 1999 | (EIS): Coonrod, Salt, Cook |
| Lila Canyon Vegetation Survey; App 3-2A | Nov. 2000 | EIS: Coonrod, Varner |
| Threatened and Endangered Species (TE) Inventories; App 3-4 <ul style="list-style-type: none"> 1. Plant inventory 2. Plant assessment 3. Plant inventory 4. Plant inventory 5. Plant inventory 6. Proposal for a Mexican Spotted Owl (MSO) flyover survey | May 1998/9? August 2002 April 2002 May 2002 Sept. 2002 Proposed for fall 2002 | EIS: Official names not provided EIS: Official names not provided EIS: Official names not provided EIS: Official names not provided OGM: Susan White Proposed to contract EIS: Official names not provided |
| Raptor Surveys; App 3-5: | 1999 - 2002 | DWR: Chris Colt |
| UDWR Wildlife Report; App 3-6 | Not provided | DWR: Official names not provided |
| Productivity Within And Around The Permit Area; App 3-7 | June 25, 1998 | NRCS: G. Cook EIS: Coonrod |

The Permittee must provide the names and organization of participants who conducted the surveys in Appendices: 3-1, 3-2, 3-4 (items numbered 1-4 and 6 in the table above), and 3-6 (R645-301-130).

Engineering

SUWA has raised concerns that the various terms for coal mine waste that are used in the PAP are confusing. The terminology is explained in Section 536 and in Appendix 5-7 of the PAP. The Permittee has replaced the term “rock-slope material” with "rock-slope material/ mine development waste" in some sections of the PAP.

By the definitions in the Coal Mining Rules, coal-processing waste and underground-development waste - which is waste rock excavated, moved, and disposed of from underground mine workings - are coal mine waste. Coal mine waste deposited on the surface forms a refuse pile. The PAP distinguishes a sub-category of coal mine waste: slope-rock waste or “rock-slope material/ mine development waste” is the coal mine waste to be produced by construction of the entry slopes - material that will be basically free of coal, segregated from other waste in the refuse pile, and used as a base for construction of a shop-warehouse pad. The introductory discussion under Section 536 states that coal mine waste will be deposited in the refuse storage area shown on Plate 5-2. Section 528.320 states that areas for disposal of rock-slope material and underground development waste are adjacent and conjoined and will be treated as one area or structure, one refuse pile. Appendix 5-7 and other sections of the PAP address reclamation of the refuse pile.

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SUWA has raised concerns that the treatment of coal mine waste and that the location and extent of coal mine waste is not clear. Some statements in the PAP could be more precise in their language and can seem contradictory and confusing if read outside the context of the entire PAP. For example, it can be inferred from Section 537.200 that some waste might be placed outside the designated refuse pile in indeterminate, undesignated “low areas”; from Section 537.250 that slope rock material might be used in pads other than the shop-warehouse pad, then left there and reclaimed “in place”; and from Section 537.240 that there might be more than one waste pile. In spite of such unfocused language regarding some details, the overall plan for handling, storage and disposal of coal mine waste and reclamation of the refuse pile is sufficiently clear and meets the requirements of the Coal Mining Rules.

The refuse pile capacity is 44,400 cubic-yards (Section 520 – Refuse Pile; Appendix 5-7).

Hydrology

The Permittee is required to submit sufficient information, about the permit and adjacent areas, to allow the Regulatory Authority to make a determination of impacts to the hydrologic resources.

A review of the December 6, 2002 submittal found that the Permittee provided some of the information, but did not include all needed information to address the deficiencies of the previous submittal.

The statements made in the PAP need to be substantiated with data, backed up with specific information, and contain references to data sets. The submittal of December 6, 2002 does not completely address the necessity and reasoning for disturbing the channel for the sedimentation pond when it could be constructed outside the channel resulting in less disturbance to the site. In addition, there was no information on why the turnaround road needs to be placed close to the edge of the stream channel embankment, or why there were no additional designs for placing potential UPDES discharge points in different drainages.

Subsequent sections of this TA outline the specific requirements for information needed by the Division to make findings required under the Rules.

CHIA

Resource maps, plans, and site-specific information in the Lila Canyon Extension PAP are based on, among other sources, the old PAP for the Kaiser South Lease area. The Permittee has a copy of the Kaiser South Lease PAP (Personal communication, Jay Marshall). Under R-645-301-122, referenced materials are to be provided to the Division by the Permittee or be readily available to the Division. The Kaiser South Lease PAP should be appended to the Lila Extension PAP or otherwise be made available to the Division to use in preparing the TA and CHIA.

Findings:

The Permittee has not met the requirements of the Regulations for Technical Data Reporting. Prior to approval, the Permittee must provide the following in accordance with:

R-645-301-122, -725, Referenced materials are to be provided to the Division by the Permittee or be readily available to the Division. The Kaiser South Lease PAP should be appended to the Lila Extension PAP or otherwise be made available to the Division to use in preparing the TA and CHIA.

R645-301-130, Include in PAP the qualifications of the consulting soil scientist.

R645-301-121.200 The Permittee shall reevaluate the PAP to give specific, detailed information to address and substantiate comments under each regulation.

R645-301-130, The PAP must contain the names, organizations, and qualifications of all contributors who conducted the following surveys(1) Vegetation Study Horse Canyon; App 3-1 (Unless omitted - see Vegetation Resource Information R645-301-121.100) (2) Vegetation Study South Lease Area; Kaiser Steel; App 3-2 1 (Unless omitted - see Vegetation Resource Information R645-301-121.100) (3) TE Inventories; App 3-4 (#1-4, and #6; numbers refer to table above) (4) MSO flyover survey (5) Raptor Surveys; App 3-5 (6) UDWR Wildlife Report; App 3-6 (7) Productivity Within And Around The Permit Area; App 3-7.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

The maps submitted within the application meet the size requirements specified in the coal rules.

Plate 5-1, Previously Mined Areas, delineates the old works of the Horse Canyon Mine and the Book Cliffs Coal Company. Plate 5-1 has been updated with the years that mining and reclamation activities were conducted. This designation allows the reviewer to determine if the operations were conducted on/or before August 3, 1977 (Pre-SMCRA) and/or after August 3, 1977 (Post-SMCRA).

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Findings:

Information provided in the application meets the minimum Maps and Plans requirements of the Regulations.

ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-411, -301-521, -301-721.

Analysis:

The Horse Canyon Mine is in the Book Cliffs coalfield in Emery County near East Carbon and Sunnyside, Utah. The topography of Horse Canyon and Lila Canyon are shown on the Cedar and Lila Point 7.5 Minute Quad maps, produced by the Geological Survey of the U.S. Department of the Interior, 1985.

In its location on the western slope of the vast and largely undeveloped Tavaputs Plateau, the proposed area of development includes some areas that are designated as Wilderness Study Areas and some designated as Wilderness Inventory Areas. The proposed Lila Canyon portal site lies just five miles from State Highway 6 and is immediately adjacent to an “unimproved” road (Plate 1-1).

The existing Mining and Reclamation Plan (MRP) for Horse Canyon is referred to as Part A and the application for Lila Canyon Extension is referred to as Part B. The permit area for Horse Canyon Part A is 1,327.75 acres and the proposed permit area for Lila Canyon Extension Part B is 4,664.32 acres. The combination of Horse Canyon Part A and Lila Canyon Extension Part B would bring the total new permit area to 5,992.07 acres.

The Lila Canyon Extension (Part B) site has a southwest aspect at the base of the Book Cliffs. The pediments are composed of sandstone over shale with a prevalence of cobbles, stones and boulders. It is an erosional environment. The soil receives protection from surface rocks, vegetation and biologic soil crusts.

Salt desert shrub and juniper are the predominant vegetative communities.

Findings:

Information provided in the application meets the minimum General Environmental Resource Information requirements of the Regulations.

PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

Analysis:

The Permittee states in Section 112.600 of the PAP and on Plate 1-1 than Plate 1-1 is the official permit boundary map and it will be used to clarify any questions about the permit boundaries. The permit area of 5,992.07 acres is shown on Plate 1-1 and Plate 5-4. The permit boundaries are divided into Part A, the Horse Canyon project, and Part B, the Lila Canyon Extension.

The Permit Area is reported on page 12 of the PAP as **5,992.07 acres** [for both Part A (Horse Canyon) and Part B (Lila Canyon)]. As explained on page 12 of the PAP, this figure does not match the **5,544.01 acres** listed on page 9 and in Table 1-1 for federal acres within the permit area, because the **5,992.07** figure includes surface acreage within the permit area that is not included in the federal leases. Table 4-2 breaks out the private, state and federal acreage within Parts A and B of the permit area. Table 4-2A breaks out the private, state and federal acres of coal ownership within Parts A and B of the permit area. There are six federal leases in the permit area. NOTE: Both Tables 4-2 and 4-2A differentiate between Horse Canyon and Lila Canyon, but for permitting purposes, the Tables would do better to discuss Part A and Part B of the Horse Canyon Mine.

The mine site is located in T.16S, R.14 E, Section 15, SE 1/4 SW 1/4. The proposed mine site is located upon an alluvial/colluvial bench at an elevation of 5,800 to 6,500 feet where the two forks of Lila Canyon converge. Page 12 of Chapter 1 indicates that of the **40.77 acres** within the disturbed area boundary, only 25.06 acres will actually be disturbed. Chapter 2, page 10 indicates that only **25 acres** of topsoil will be salvaged. Plates 1-2, 5-1 and 5-2 show islands of "undisturbance."

What seems to be in contradiction to this concept of limiting the disturbance to twenty five acres is the statement in the plan indicateing that the **40.77 acres** within the disturbed area are divided as follows: the pad, silos, coal processing structures, and parking total 37.37 acres and the roads and portal pads add 3.4 acres more (p90 Section 542.200 and p1 of Appendix 5-8). If only 25 acres are to be disturbed, then the pads silos coal processing structures and parking, roads and portal pads can not add up to 40.77 acres. All sections of the PAP must be consistent in the description of the disturbed area boundary.

The Permittee did not include any subareas for which additional permits are anticipated. In the past, the Permittee has indicated that they may seek additional permits for reserves south of the proposed permit area. To avoid confusion the Permittee needs to state what if any additional subareas they may seek additional permits for. The Permittee states that the life of mine is 20 years but the mine map shows only 14 years of production.

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In Section 521.141 of the PAP, the Permittee only refers to the life of the permit, which is 5 years, not the life of the mine for defining the permit boundary. This issue is also addressed in the maps, plans, and cross-sections part of resources information section of the TA.

The disturbed area boundary is shown on several maps including Plate 1-2, Disturbed Area Boundary.

Findings:

The Permittee has not met the requirements of the Permit Area. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-116.100, The Permittee must clearly state the anticipated number of acres of surface disturbance to be affected during the life of the mine and statements of the number of disturbed acres must be consistent within the PAP.

R645-301-521.141 and R645-301-116.100, The Permittee must identify all subareas for which additional permits may be sought over the life-of-mine. That information must be shown on maps and in the text of the PAP. In Section 521.141 of the PAP the Permittee only refers to the life of the permit which is 5 years. This issue is also addressed in the maps, plans, and cross-sections of resources information section of the TA. Examples of future expansion include but are not limited to southward expansion for additional coal reserves and expanding the disturbed area for a future discharge point. Due to the size of the two areas, the potential expansion areas must be shown on maps of adequate scale.

HISTORIC AND ARCHEOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.12; R645-301-411.

Analysis:

The PAP states that Appendix 4-1 (Confidential Files) contains information from cultural resource surveys. Currently, the surveys include:

- Keith Montgomery 1998 Cultural resource inventory of the soil testing area for the Lila Canyon coal project.
- "Appendix XI" BLM Cultural resource information.
- EA #UT-066-93-28, Price river resource area File #3451.
- Rebecca Rauch 1981 Cultural resource inventory of the Kaiser Steel Corporation south lease mine property and a test excavation (42EM1343) in Emery county.

- Keith Montgomery 1999 Cultural resource inventory of transportation corridors and power line route for the Lila Canyon Extension project.

The PAP states that Southworth and Nielson (1986) conducted a survey, but this survey is missing from Appendix 4-1 (Confidential Files). The Permittee must provide the missing Southworth and Nielson survey (R645-301-411.140). The Environmental Assessment (EA) conducted by the BLM (USDI EA No.UT-070-99-22) states that Miller (1991) conducted an additional survey. The application refers the reader to the BLM to obtain the Miller file. The Division, however, requests that relevant portions of the referenced Miller survey are provided in the PAP. The requested information must include a brief and concise abstract and explicit citations. (R645-301-411.140; R645-301-122).

The EA states that archaeological inventories of the area identified eight sites and several artifacts. Seven of the eight sites are "located in Little Park, above the mine's surface facilities" (EA pg. 46; July 2000). Site 42EM2517, a Fremont component rock shelter, is adjacent to and visible from the Lila Canyon Road and the proposed mining facilities. The Fremont site is eligible for the National Register of Historic Places under Criterion (d) of 36CFR60.4 (EA pg. 46, July 2000). According to the EA, UEI will submit a data recovery plan for site 42EM2517 to the BLM. The PAP, however, states that this site does not meet National Register Criteria for age, unique architecture, historic persons or events. The Permittee must clarify this inconsistency between documents and must provide supporting evidence in the form of official documentation (R645-301-121.200).

Plate 4-3 shows the permit area with only three sites in Little Park grazing allotment. The Fremont site is discussed in the PAP and shown on Plate 4-3 (registered 12/3/02). This site is shown outside of the permit area in the Cove grazing allotment. There are still three of the seven sites identified in the EA that are not shown on Plate 4-3. The Permittee must identify all seven sites on Plate 4-3 (R645-301-411.143). According to the EA, there should be seven sites located above the mine's surface facilities. No determination can be made at this point that the resource data is adequate until all studies that have been conducted are included in the PAP.

SUWA commented that cultural surveys must be performed for all areas subject to subsidence. R645-301-411 requires that cultural and historic surveys conducted in the permit area are included in the PAP. The surveys found cultural resource sites in the vicinity, but only an isolated artifact was found in the proposed disturbed area.

In Horse Canyon, a tree is inscribed by Sam Gilson, a prominent rancher, and promoter of the uses of Gilsonite. According to the Division of State History, the application, and the text of the current mining and reclamation plan, this site is not listed on the National Register of Historic Places but is eligible for listing. The PAP Section 301-411-140 refers to a 1986 report from Don Southworth and Asa Nielson, which was not included with the application.

Maps and reports on archaeological resources have been marked confidential.

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There are no cemeteries in or within 100 feet of the proposed addition to the permit area, and it contains no units of the National System of Trails or Wild and Scenic Rivers system.

Findings:

Information provided in the application is not adequate to meet the minimum Historic and Archeology Resources requirement of the Regulations. Prior to approval, in accordance with:

R645-301-121.200, Clarify the inconsistency between the EA and PAP documents concerning archaeological site 42EM2517 and provide supporting evidence in the form of official documentation for the PAP statement of non-eligibility.

R645-301-411.140; R301-122, The Permittee must provide the following (1) Miller (1991) archaeological survey, cited by the EA (2) Southworth and Nielson (1986) archaeological survey, cited in the PAP Section 301-411-140, page 11.

R645-301-411.143, Present, on Plate 4-3, all archaeological inventoried sites located on or near the permit area.

CLIMATOLOGICAL RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.18; R645-301-724.

Analysis:

The proposed mine site is in an area that receives an average annual precipitation of approximately 14 inches. The Permittee indicates an average annual precipitation as high as 13.69 inches: the information was downloaded from the Western Regional Climate Center and is shown in Table 7-1A in Section 724.413. Table 7-1A shows the average maximum and minimum temperatures by month over thirty years (1958 –88) for the Sunnyside area. Table 7-1A also includes average annual precipitation by month and annually (13.69 inches annually) and average snowfall by month and annually (36.5 inches annually).

The closest weather station to the Lila Canyon Lease is located at Sunnyside, Utah. Based on relatively close proximity and similar locations, the west exposure of the Book Cliffs, the data from this station will be used to verify precipitation amounts and other weather conditions for the Lila Canyon Project. It is not clear if the station is still in operation since the period of record ended in 1988. No additional climatological data was submitted with the December 6, 2002 submittal providing climatological data after 1988.

A rain gauge will be installed at the site to comply with the Air Quality Approval Order (Section 724.411).

Precipitation is a factor that controls recharge to stream and springs. The type of precipitation events that are typical of the minesite should be described. The Permittee discusses the type of precipitation events that have been deemed typical of the area in section 724.200. Data should be provided to substantiate this information.

Findings:

The information provided does not meet the minimum Climatological Resource requirements of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-724.410, The Permittee shall provide up-to-date climatological information.

R645-301-724.410, The Permittee shall identify current information in the evaluation of climatic data. The Permittee shall indicate if the Sunnyside Weather Station is still functioning.

VEGETATION RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.19; R645-301-320.

Analysis:

The PAP describes the vegetative resources of the permit and disturbed areas by referring the reader to Plate 3-2 and the Appendix 3-2. The numbering system for the three entries of Appendix 3-2 is confusing because two surveys have the same header 3-2A. The Permittee should clarify appendix numbers (R645-301-121.200). To distinguish the two entries for Appendix 3-2A, the Division noted the entries as 3-2A subscript 1 and 2. The appendices include the following:

- Appendix 3-1: Vegetation Study Horse Canyon (1983 and 1985). Report does not provide official names.
 - Survey covers the Horse Canyon Mine permit area A, but not the proposed permit area B (Plate 4-3).
 - Appendix includes pages VIII-1 through VIII-8, but not pages VIII 9-46, tables, appendices, or plates (R645-301-121.200).
 - Existing pages include discussions on community types, four TE plant species, and a pinyon-juniper reference area.

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- Appendix 3-2: Vegetation Study South Lease Area (1982); Kaiser Steel. Report does not provide official names.
 - Survey covers the South Lease permit area, but not the proposed permit area B (Plate 4-3).
 - Appendix includes pages IX-1 through IX-107, but not cited plates (R645-301-121.200).
 - Existing pages contain discussions on eight community types. Data includes species lists, density, cover, productivity, and TE species for each community.
- Appendix 3-2A₁: Lila Canyon Vegetation Inventory (1998 and 1999). Coonrod, Salt, Cook.

To distinguish the two entries for Appendix 3-2A, the Division noted the entries as 3-2A subscript 1 and 2.

 - Survey covers potential disturbance and reference areas in Lila Canyon (20 acres – lower boundary and 20 acres – upper elevation). Report includes exact locations of survey sites (see Appendix [App.] 3-2A₂).
 - Report includes data on grass/sage community species, ground cover, and woody plant densities for disturbed and reference areas.
 - Permittee removed the pinyon/juniper study and reference areas from the report. This community type was deemed unfavorable for rangeland habitat (pg. 2)
- Appendix 3-2A₂: Lila Canyon Vegetation Survey (Nov. 2000). Coonrod, Varner.
 - Cover sheet titles are confusing – one reads “Appendix” the other “Attachment” (R645-301-121.200).
 - Ground cover survey covers pinyon-juniper areas of Lila Canyon surface facility disturbed site.
 - Survey includes two attachments:
 - Table summarizes data for percent ground cover.
 - Data sheets for percent ground cover and listed species and numbers.
 - Survey also includes a map (Fig. 1 of App. 3-2A) that shows locations of survey sites.
- Appendix 3-4: Threatened and Endangered Species Inventories (1998 and 2002). Report provides official names for only one - Susan White, DOGM.
 - Appendix contains five separate entries: four surveys and one assessment.
 - None of the surveys in 3-4 provides exact locations or a map of survey sites (R645-301-121.200).
 - EIS conducted a TE survey in May 1998
 - Survey covered the surface facilities and access/utility corridor areas.
 - Survey focused on four species.
 - EIS compiled an assessment in August 2002.
 - Assessors evaluated potential impacts to TE species from construction, maintenance, and operations.

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- Assessment focused on five animal and seven plant species.
- Plant species data came from a survey conducted in either 1998 or 1999 survey. The assessment shows the survey date as 1999, yet the survey report shows the date as 1998. The Permittee must provide the correct date (R645-301-121.200).
- Surveyors conducted three TE surveys in 2002 that focused on selected species.
 - April 2002
 - Follow up of the 1998 surface facility survey.
 - Survey focused on ten plant species.
 - May 2002
 - Follow up of the 1999 and 2000 surface facility surveys. The PAP does not include a 1999 TE survey (R645-301-121.200).
 - Survey focused on 16 plant species.
 - September 2002: Survey focused on a single plant species.
- Appendix 3-7: Productivity Within and Around the Permit Area (1999). Cook.
 - Surveyors measured productivity for two reference areas and one disturbed area.
 - Report did not provide detailed locations of survey sites (R645-301-121.200).

SUWA commented about a lack of current data for the entire permit area. The PAP (sec. 320) infers that all vegetation resources of the entire Lila extension have been described. The Permittee states that the Lila Canyon permit area includes “a portion of the reclaimed Horse Canyon Mine and virtually all of the South Lease Tract” (pg. 3; sec.321.100). Corresponding Appendices 3-1 and 3-2 do not include specific locations or maps of the survey sites. The Permittee must clearly detail survey sites in order for the Division to ascertain whether vegetation resources have been adequately surveyed for the Lila Canyon permit area (R645-301-121.200).

Appendix 3-1 lists nine community types for the Horse Canyon permit survey area. The Permittee states that, of the nine types, pinyon/juniper community is the only major type present in the proposed permit area (pg. VIII-4). The Permittee reports that all 63.6 acres of the disturbed land consists of “this” vegetation type and refers the reader to VIII-2 for community descriptions (pg. VIII-5). However, the word “this” is vague and the community type is not explained on page VIII-2. These references in Appendix 3-1 either do not match community types represented in Plate 3-2 or are confusing.

Kaiser Steel Corporation submitted the South Lease survey (App. 3-2), which the area is south of the current application area. Plate IX-1 Vegetation Map of the South Lease Property (1983) shows that none of permit area B (Lila Canyon extension) was included in the South Lease Property vegetation study. The vegetation survey conducted for South Lease, therefore, does not cover the Lila Canyon Extension. A single map that shows the area of the South Lease Property vegetation study and permit area B would solve this discrepancy. Appendix 3-2 lists

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eight community types for the South Lease permit survey area. These community types, also do not match community types represented in Plate 3-2. The Division reviewed this survey in the early 1980's, but never issued a permit.

In summary, the Permittee should omit Appendices 3-1 and 3-2 because information is unclear, missing, outdated, or unrelated (R645-301-121.100; R645-301-121.200).

The two studies "Lila Canyon Vegetation Studies" (1998/1999 Coonrod, Salt, Cook; App. 3-2A₁) and (2000 Coonrod and Varner; App. 3-2A₂) are confusing, inconsistent, and incomplete. The survey in Appendix 3-2A₁ is a compilation of data taken over a period of three years:

- 1998: field survey
- 1999: follow-up field survey
- 2000: density and revegetation predictability surveys.

The proposed disturbed area grass/shrub community and a corresponding reference area to the west of the proposed disturbed area was sampled some time between 1998 and 2000 for vegetative cover and shrub density (App. 3-2A₁). It is unclear when this sampling was conducted. (R645-301-121.200).

The Figure 1 of Appendix 3-2A₁ shows the reference area as a grass shrub community, which corresponds to the inventory tables. This depiction of the reference site, however does not agree with the Vegetation map (Plate 3-2). The map shows the site as a sagebrush grass community, but the inventory tables do not report any type of sagebrush. These differences do not clearly show the existing plant community type for the reference area. Similarly, the Vegetation map shows a very small portion of the disturbed area as sagebrush grass, to which the data in the inventory tables or Figure 1 do not correspond. (R645-301-121.200).

The inventory (App. 3-2A₁) found the shrub and grass dominant species to include "Cheat Grass", Rabbitbrush (*Chrysothamnus viscidiflorus*), and "Lichen". Interestingly, rabbitbrush (*Chrysothamnus viscidiflorus*), and "Lichen" were not encountered in the sampling of the disturbed area or reference area (data sheet, App. 3-2). (R645-301-121.200).

Appendix 3-2A₁ provides a plant inventory list, density, ground coverage, and physical site characteristics for 15 transects. The raw data sheets (App. 3-2A₂) and accompanying map (Fig. 1 of App. 3-2A) provides a location of the survey transects. The map indicates there were over 50 transects surveyed, yet only 15 transects were reported (R645-301-121.200).

There are inconsistencies between the text and Tables 1 and 2 (App. 3-2A₁). For example, the text mentions *Elymus salinus*, *Tamarix pentandra*, *Sarcobatus vermiculatus*, *Chrysothamnus viscidiflorus*, and Lichen sp., yet these species are not included in Tables 1 and 2. Both tables list *Elymus elymoides*, which is not discussed in the text. It is unclear why this species is in the

table given that the sum number of plants is zero for all transects. These tables also have unknown or misspelled plant species. (R645-301-121.200). Total vegetative cover of the proposed grass/shrub community for the disturbed and reference areas is approximately 43%.

The survey in Appendix 3-2A₂ summarizes the percent cover for pinyon-juniper stands. This appendix contains two attachments: a table describing cover (A₁) and raw data sheets for the inventory surveys conducted in 1998/99 (A₂). Only ten samples were taken, which is below the Division's "Vegetation Information Guidelines" of a 15-sample minimum. Sample sizes were 0.01 acres, which is six times larger than the Division's recommendation. Large sample plots are difficult to accurately estimate vegetative cover. By way of explanation, the Permittee states in an accompanying letter to this PAP (dated December 5, 2002, page 6):

- The Permittee contracted a qualified surveyor in plant taxonomy.
- The Permittee contacted DOGM about the data collection procedures.
- The Surveyor used the Guidelines as guidelines and not regulations.

The surveyors conducted the percent cover study from October 28th through November 2nd, 2000 (App. 3-2A₂). Woody plants had retained some of their leaves and were reportedly easy to survey. The herbaceous plants, however, were difficult to survey because it was questionable whether the plants were alive or dead. A survey conducted during the fall season would underestimate plant cover, which will influence success standards. The Permittee states in an accompanying letter to this PAP, that the operator contacted DOGM for approval to survey during September and received approval. Irrespective, the undocumented approval was for September and not late October early November. (R645-301-121.200 and -132)

For the November survey, surveyors examined ten sites and calculated an average percent cover at 33 for the pinyon-juniper community type. The cover was dominated by Utah juniper; other species included Salina wildrye, fourwing saltbush, prickly pear cactus, snakeweed, and galleta.

Woody plant density was 5,006 plants per acre for the grass/shrub disturbed and reference areas, as well as the "PJ" area (App. 3-2A₁). Snakeweed is the dominant woody plant in these areas. Five samples from each type were taken. Sampling does not meet the minimum regulatory requirements; the Division's Vegetation Information Guidelines call for 15 samples from each community using this sampling technique. The Permittee states in an accompanying letter to this PAP, that the surveyor used the Guidelines as guidelines and not regulations.

Vascular plant cover (3-2A₂), woody plant density (3-2A₁), and productivity (App. 3-7) were the only parameters measured in the pinyon/juniper area. The Permittee did not measure cover from rock, litter, or biologic soil crusts. Regulation R645-301-321 requires a description of the plant communities in the proposed disturbed area adequate to predict the potential for reestablishing vegetation. The preamble to the federal coal regulations permanent program

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discusses the use of the word “vegetation” in the regulations. The following is an excerpt from the preamble:

In the context of the regulations, reference to vegetation normally means the higher forms of plants. It would not generally include lesser forms which do not provide cover or forage for wildlife, or contribute to erosion control, except those lesser plants which are threatened or endangered or are an essential component of a habitat critical to the survival of a threatened or endangered species (44 Fed. Reg. 14,902).

Biologic soil crusts are an important component of erosion control for soils. Baseline data must include measurements of this crust. Lack of biological crust evaluations was also a concern of SUWA. (R645-301-321.100)

In summary, the Division requests to omit the surveys in Appendix 3-2A₁ and 3-2A₂ from the PAP and conduct a new study (R645-301-321.100). The disturbed and reference area communities must be defined and sampled by a person qualified in the field of plant taxonomy and quantitative ecology and according to the Division’s Vegetation Information Guidelines.

The vegetation map (Plate 3-2) locates “land feature” of the permit area. These “features” include the following plant communities and geologic formations: salt desert shrub “shale”, pinyon/juniper, spruce/fir, mancos, and mountain brush. The PAP must describe all plant communities and the map must show all the communities’ (R645-301-323.400). The vegetation map shows only a small area for shrub and grass community in the disturbed area. The area drawn does not agree in size with Figure 1 Appendix 3-2A, or with a visual approximation of size made during a field visit March 2003 by the Division. The map also does not clearly define the tall shrub community of the lower drainages. The vegetation map (Plate 3-2) does not correlate with the community descriptions provided in the South Lease study. However, if it is confirmed that permit area B (Lila Canyon Extension) was not included in the South Lease Property vegetation survey, then this lack of a correlation really does not matter. A single map that shows the area of the South Lease Property vegetation study and Lila Canyon permit area would solve this discrepancy.

SUWA commented that the PAP should identify important plant communities such as riparian areas. The spring-associated plant communities are explained in Appendix 7-8. The PAP, however, must also include a brief description characterizing the resources that occur in or near the permit area for each of these spring (R645-301-321.100). The vegetation map must also show plant communities that may be influenced by the springs or seeps (R645-301-323.200). The reference area is not shown on the vegetation map (R645-301-323.100).

In summary, the Permittee must replace the vegetation map with a map that accurately represents the reference area, all plant communities, and special habitats. A map drawn on a scale of 1”=4000’ shows the entire area, which is beneficial. However, an additional map drawn at a more detailed scale, such as 1”=400’, of the reference and disturbed areas will help during

evaluation processes. The Division requests two vegetation maps: one that shows the entire area and one that details the reference and disturbed areas. (R645-301-323).

The study "Productivity Within and Around the Permit Area" (1999 Cook and Coonrod; App. 3-7) contains productivity estimates of proposed disturbed and associated reference areas. The grass/shrub and pinyon/juniper communities had production levels of about 850 and 250-300 lbs/ac, respectively.

Findings:

Information provided in the application is not considered adequate to meet the minimum Vegetation Resource Information requirement of the Regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-121, The PAP (Section [Sec.] R6450301-320) infers that all vegetation resources of the entire Lila extension are included. Information needed to predict the potential for reclamation, however, is either missing or is not presented clearly. To present required information more clearly, the Permittee should: **(1)** Omit Appendix 3-1 and 3-2 because: Information does not directly and entirely relate to permit area; Reports have missing pages, plates, appendices, and tables; Information on community types in text does not directly match those shown on Plate 3-2; Reports do not include exact locations of survey sites; Reports do not cover riparian areas; Data is outdated **(2)** Clarify Appendix 3-2A (unless omitted): Clarify appendix numbers to read 3-2, 3-2A₁, and 3-2A₂; Clarify cover sheets; 3-2A₁: Provide survey dates of the vegetation inventory; 3-2A₁: Provide accurate and corresponding representations of the plant communities in the Vegetation map (Plate 3-2), Figure 1 of Appendix 3-2A, and Tables 1 and 2; 3-2A₁: Document whether or not *Chrysothamnus viscidiflorus* is found in the disturbed and reference areas; 3-2A₁: Describe why the map (Fig. 1) shows over 50 survey sites, yet text describes only 15; 3-2A₁: Remove inconsistencies between Tables 1 and 2 and text; 3-2A₁: Correct unknown or misspelled plant species; 3-2A₂: Describe the value for the percent cover survey of the pinyon juniper community; 3-2A₂: Justify the reason why surveying in November for percent cover is acceptable **(3)** Clarify Appendix 3-4: Provide survey site locations for the TE and productivity studies (Appendices 3-4 and 3-7); Provide correct year in the August 2002 survey submittal; Provide missing 1999 TE survey mentioned in May 2002 study; Provide survey site locations for the productivity studies (App. 3-7).

R645-301-321.100, Conduct a new vegetation survey. A qualified person in the field of plant taxonomy and quantitative ecology must conduct the survey and analysis according to the Division's Vegetation Information Guidelines. Perform vegetation sampling during a time of greatest species diversity, preferably in late spring. Provide raw data sheets. Clearly define the disturbed and reference area

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communities. Include biologic soil crusts in the vegetation sampling. Before sampling, the Division must review more thoroughly the proposed location of the reference area.

R645-301-323, Provide a brief description characterizing the resources that occur in or near the permit area for each of spring.

R645-301-323, Provide accurate vegetation map(s): (1) Include all plant communities (shale and escarpments are not plant communities) (2) Show accurate dimensions and aspects of the communities (3) Detail areas around springs and seeps (4) Include the reference site (5) Submit two vegetation maps – one that shows the entire permit B area and one that details the reference and disturbed areas.

R645-301-323.400, The PAP must describe all plant communities, including those occurring near seeps and springs.

FISH AND WILDLIFE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.21; R645-301-322.

Analysis:

Wildlife habitat is discussed in section 322.220 and shown on Plate 3-1. The disturbed area contains habitat for Rocky Mountain bighorn sheep and mule deer, and pronghorns (Plate 3-1). Raptors nest in the cliffs surrounding the proposed disturbed area. The permit area includes areas of critical habitat for elk and deer.

The Permittee must present raptor information clearly and correctly. The Permittee must update reference to the peregrine falcon in section 322.210 in the PAP (pg. 4; sec. 322.210). This species is not a TE species. The text on page seven refers the reader to Appendix 3-3, but that list also does not represent current TE species. Provide a current and complete list of TE species for Emery County. Raptor maps are confusing concerning nest numbers 946 and 820. Correct nest number labels on the map in Appendix 3-5 and map - Plate 3-1. PAP does not include the raptor survey conducted in 2002 (sec. 322.220; pg. 6; para 6). Add the 2002 survey to the listed dates. (R645-301-121.200).

Appendix 3-5 contains unnecessary and unrelated information (R645-301-121). Remove the following:

- 1980 DWR letter on raptors: information is not current, and relates to Horse Canyon and not to Lila Canyon.

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- 1990 Letters: letters pertain to the removal an abandoned migratory bird nest located at the Horse Canyon surface facilities site and not to Lila Canyon.
- 1990 Raptor survey: survey pertains to the Horse Canyon surface facilities site and not to Lila Canyon.

The PAP provides data from raptor surveys conducted in the area in 1990 (unrelated area), 1998, 1999, 2000, 2001 and 2002. The 2002 survey map (Plate 3-1) shows locations of five nests (yet six corresponding numbers R301-121.200) within about one mile of the proposed surface facilities. Section 322.220 (pg.10) states the areas surveyed include the entire Book Cliffs escarpment within the permit area plus a one-mile buffer zone around potential development areas. The ARC/GIS file obtained from Division of Wildlife Resources (DWR) shows the flight line for the 2002 survey. DWR concentrated the survey in areas within township quadrants 9, 10, 15, 16, and 22, but marginally surveyed potential habitats within quadrants 23 and 26. These two quadrants are located in the southwest portion of the permit area and may be suitable cliff habitat. These quadrants are outside the subsidence buffer zone, but within the permit area and immediately adjacent to the buffer zone. The Permittee must request a thorough survey during the 2003 and subsequent-year raptor surveys of these southwest quadrants as well as other rock outcrops within and near the permit area (R645-301-322.100). The table below provides a summary of the 2002 and 2001 raptor helicopter surveys:

| Nest ID | Species | 2002 Status | 2001 Status |
|----------------|----------------|--------------------|--------------------|
| 455 | Golden Eagle | Inactive | Dilapidated |
| 456 | Golden Eagle | Inactive | Inactive |
| 719 | Golden Eagle | Dilapidated | Dilapidated |
| 946 | Golden Eagle | Inactive | Dilapidated |
| 947 | Golden Eagle | Inactive | Inactive |
| 1280 | Unknown | Inactive | NA |

The Permittee commits to conduct raptor surveys one year before all proposed new construction or potentially disruptive mining activity. These surveys should be conducted in all suitable habitats within a one-mile radius of activity and the main facilities area.

The PAP indicates the Permittee consulted with United States Fish and Wildlife Service (USFWS), DWR, and BLM concerning raptor nests near the mine. Five nests are close to the proposed surface facilities. The Golden Eagles have not used or tended these nests within the last three years. The agencies decided there is a high probability the birds will abandon the nests because the nests will be near surface facilities. The Permittee agrees to first, contact the Division and second, initiate a mitigation plan if any of the five nests are destroyed due to mining operations (pg. 10/11; sec. 332.220). The plan includes increasing prey-based habitat in the area.

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Lila Canyon Extension plans to have aboveground power lines (pg.5; sec. 322.210). The Permittee commits to construct all lines following the guidelines developed by the Environmental Criteria for Electric Transmission Systems or the Division. Provide the Division with the proposed power pole design for the mine site. Also, provide a drawing for the power pole and line locations. New power pole configuration must be designed to maintain adequate spacing. A minimum distance of 60 inches between energized hardware or between phases or between phases and ground wires is required to provide safe perching for large raptors (eagles). This information will assist the Division in determining whether best technology is proposed and if it will minimize electrocution hazards to raptors. (R645-301-358.510).

SUWA commented that the PAP does not contain site-specific resource information, fails to address high value wildlife habitats, and lacks sufficient information to design the protection plan. SUWA commented that the Permittee failed to specifically inventory species dependent on seeps and springs, especially amphibians. The application only addresses amphibian occurrences or potential occurrences through reference to the DWR publication "Fauna of Southeastern Utah and Life Requisites Regarding their Ecosystems" (App. 3-6 provides only a cover page of publication). The application describes the vegetation surrounding each spring, but does not address the potential for amphibian occurrences especially those on the state sensitive species list (R645-301-322).

BLM, DWR and DOGM wildlife specialists held a meeting on June 6, 2002 to discuss the level of detail required for wildlife information. The agencies discussed the improbability of high densities of snake populations because the permit area is dry and provides little prey base. The group also discussed the findings of big horn sheep in Lila Canyon and in an unnamed canyon located in the southwest corner of the permit area. These animals were spotted during the raptor survey conducted in May 2002. Furthermore, the agencies discussed the need for additional wildlife surveys. The list below provides the groups conclusions:

- Not require UEI to:
 - Provide additional information regarding the big horn sheep numbers or use.
 - Conduct bat surveys because mining activities in the permit area are unlikely to affected bats.
 - Conduct Merriam's Kangaroo Rat and Ringtail studies although these are two Utah sensitive mammal species likely to occur within the permit area.
 - Conduct formal surveys or monitoring programs for any amphibians.
 - Conduct reptile surveys.
- Require UEI to:
 - Survey all seeps and springs. The report must describe:
 - Riparian habitat.
 - Vegetation for all seeps and springs.
 - Presence of any amphibians.
 - Monitor south canyon water source(s) (see paragraph below).
 - Commit to replace consumed water.

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- Incorporate all surveys and reports into the PAP.

On June 12, 2002 Division staff and DWR visited the unnamed south canyon and found four seeps. No water was found in the lower one mile of Lila Canyon. The entire canyon showed evidence of big horn sheep use. The seeps appear to be a significant water source for ewes and lambs. The Permittee states in an accompanying letter to this PAP, that a ground survey was conducted to determine unidentified water sources along the face of the Book Cliffs and none were identified. The Permittee also agrees to monitor L-16-G and L-17-G on a quarterly basis beginning the second quarter of 2002. The appendix to the hydrology section provides data for the third quarter for these springs for 2002.

Threatened and Endangered Species

Table 3-1 lists threatened or endangered species that potentially occur in Emery County. Appendix 3-3 contains an outdated letter (February 4, 1998) from the USFWS to EIS, consultants to the BLM, during development of the Environmental Assessment.

The Division initiated Section 7 consultation with the USFWS on May 9, 2002. They responded with a list of endangered (E), threatened (T), and candidate (C) species that may occur in the area of influence. The T & E species are listed below and each species is evaluated for permit adequacy.

| Common Name | | Habitat | PAP |
|------------------------|---|---|--|
| Barneby Reed-mustard | E | Chinle Formations. | Appendix 3-4. BLM Biological Assessment (Aug. 2000). No plants located within permit area. No suitable habitat. Appendix 3-4. Survey (May 2002). No plants located within surface facilities. DOGM: Suitable habitat assessment inadequate (R645-301-322.220). |
| Jones Cycladenia | T | Gypsiferous saline soils on the Chinle, Cutler, and Summerville Formations. | Appendix 3-4. BLM Biological Assessment (Aug. 2000). No plants located within permit area. No suitable habitat. Appendix 3-4. Survey (May 2002). No plants located within surface facilities. DOGM: Suitable habitat assessment inadequate (R645-301-322.220). |
| Last Chance Townsendia | T | Salt desert shrub and PJ on clay or clay silt soils | Appendix 3-4. BLM Biological Assessment (Aug. 2000). No plants located within permit |

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|------------------------|---|--|---|
| | | of Arapien and Mancos Shale. | <p>area. No suitable habitat.</p> <p>Appendix 3-4. Survey (April 2002). No plants located within surface facilities.</p> <p>DOGM: Suitable habitat assessment inadequate (R645-301-322.220).</p> |
| Maguire Daisy | T | Sands from Wingate, Chinle, and Navajo Sandstone Formations. | <p>Appendix 3-4. BLM Biological Assessment (Aug. 2000). No plants located within permit area. No suitable habitat.</p> <p>Appendix 3-4. Survey (May 2002). No plants located within surface facilities.</p> <p>DOGM: Suitable habitat assessment inadequate (R645-301-322.220).</p> |
| San Rafael Cactus | E | PJ limestone gravels. | <p>Appendix 3-4. BLM Biological Assessment (Aug. 2000). No plants located within permit area. No suitable habitat.</p> <p>DOGM: Occurrence assessment inadequate (reference to 1998 survey does not show results for this species (R301-322.200).</p> <p>DOGM: Suitable habitat assessment inadequate (R645-301-322.220).</p> |
| Winkler Cactus | T | Salt desert shrub communities. | <p>Appendix 3-4. BLM Biological Assessment (Aug. 2000). No plants located within permit area. No suitable habitat.</p> <p>Appendix 3-4. Survey (April 2002). No plants located within surface facilities.</p> <p>DOGM: Suitable habitat assessment inadequate (R645-301-322.220).</p> |
| Wright Fishhook Cactus | E | Salt desert shrub to Juniper on the Mancos Shale. | <p>Appendix 3-4. BLM Biological Assessment (Aug. 2000). No plants located within permit area. No suitable habitat.</p> <p>Appendix 3-4. Survey (April 2002). No plants located within surface facilities.</p> <p>DOGM: Suitable habitat assessment inadequate</p> |

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| | | | |
|---------------------|---|---------------------------------|---|
| | | | (R645-301-322.220). |
| Bonytail Chub | E | Colorado River. | <p>Appendix 3-4. Addressed in BLM Biological Assessment (Aug. 2000). No fish located within permit area.</p> <p>Section 322.220 (pg. 11). No perennial streams. No potential threat to aquatic species. Table 1 (pg. 7). Theoretical impact.</p> <p>DOGM: Impact assessments inadequate (R645-301-322.100; R645-301-333).</p> |
| Colorado Pikeminnow | E | Colorado River. | <p>Appendix 3-4. Addressed in BLM Biological Assessment (Aug. 2000). No fish located within permit area.</p> <p>Section 322.220 (pg. 11). No perennial streams. No potential threat to aquatic species. Table 1 (pg. 7). Theoretical impact.</p> <p>DOGM: Impact assessments inadequate (R645-301-322.100; R645-301-333).</p> |
| Humpback Chub | E | Colorado River. | <p>Appendix 3-4. Addressed in BLM Biological Assessment (Aug. 2000). No fish located within permit area.</p> <p>Section 322.220 (pg. 11). No perennial streams. No potential threat to aquatic species. Table 1 (pg. 7). Theoretical impact.</p> <p>DOGM: Impact assessments inadequate (R645-301-322.100; R645-301-333).</p> |
| Razorback Sucker | E | Colorado River. | <p>Appendix 3-4. Addressed in BLM Biological Assessment (Aug. 2000). No fish located within permit area.</p> <p>Section 322.220 (pg. 11). No perennial streams. No potential threat to aquatic species. Table 1 (pg. 7). Theoretical impact.</p> <p>DOGM: Impact assessments inadequate (R645-301-322.100; R645-301-333).</p> |
| Bald Eagle | T | Tall trees such as Cottonwoods. | Appendix 3-4. Addressed in BLM Biological Assessment (Aug. 2000). Action outside range |

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|------------------------------|---|---|---|
| | | | <p>for species.</p> <p>Section 322.220 (pg. 10). Suitable habitat within range of permit area.</p> <p>Table 1 (pg. 7). Nests in Utah.</p> <p>DOGM: Occurrence assessments inadequate (R645-301-322.200).</p> <p>DOGM: Impact assessment inadequate (R645-301-322.100).</p> |
| Mexican Spotted Owl | T | Slopes >40% with mixed conifer, all rugged areas, and 2x2 rule. | <p>Appendix 3-4. Proposed survey.</p> <p>DOGM: Proposal inadequate.</p> <p>Table 1 (pg. 7).</p> <p>DOGM: Suitable habitat assessment inadequate (R645-301-322.220).</p> <p>DOGM: Occurrence assessment inadequate (R645-301-322.200).</p> <p>DOGM: Impact assessment inadequate (R645-301-322.100).</p> |
| Western Yellow-billed Cuckoo | C | Riparian areas at least 30 feet wide. | DOGM: Not addressed in PAP. |
| Black-footed Ferret | E | Historically within range. | <p>Appendix 3-4. BLM Biological Assessment (Aug. 2000). No prairie dog towns in disturbed area. Table 1 (pg. 7). No confirmed sightings in Utah for years.</p> <p>DOGM: Extirpated from Emery County.</p> |

The USFWS did not identify the southwestern willow flycatcher as a species that may occur in the area of influence. The PAP (Sec. 322.210) discusses the potential occurrence of the southwestern willow flycatcher on the permit area. No large riparian area exists to support the southwestern willow flycatcher on the permit area. SUWA commented that this species should be addressed because of the influence of mining on Range Creek. The Permittee must address more thoroughly, in the hydrology section, the affects of mining operations on Range Creek. If mining is determined to affect Range Creek, then the Permittee must also address how the

mining effects to Range Creek will affect the southwestern willow flycatcher at Range Creek. (R645-301-322.100).

SUWA commented to update surveys for sensitive, threatened and endangered species. The USFWS suggested (e-mail from Laura Romyn to Susan White, 4/22/02) to conduct annual TE and sensitive species surveys for proposed disturbed areas until construction begins. As a follow up, the Permittee conducted two plant surveys at the surface facility site in 2002. The April 2002 results showed no occurrence of five federal TE plant species or five BLM candidate and sensitive plant species. The May 2002 results showed no occurrence of seven federal TE plant species or nine BLM candidate and sensitive plant species. Susan White (DOGM) and Wayne Luddington (BLM) also conducted a survey in portions of Columbia, Utah and Lila Canyon. The September 2002 results showed occurrences of Book Cliff's blazing star in probable habitats. Although the Permittee conducted surveys of many TE and sensitive species, prior to the Division continuing with Section 7 consultation, the Permittee must conduct the following: (R301-322; 333)

- Habitat impact assessments for the bald eagle.
- Occurrence surveys and habitat impact assessments for Mexican spotted owl.
- Occurrence surveys and habitat impact assessments for the San Rafael cactus.
- Quantitative water consumption impact assessment for bonytail chub, Colorado pikeminnow, Humpback chub, and razorback sucker.
- Suitable habitat assessment.

For the Suitable habitat assessment, provide detailed descriptions as to why the disturbed area is not suitable habitat for the TE and sensitive species. The table above shows that the Permittee addressed suitable habitat with the following statement: "No suitable habitat". The Division does not believe this kind of response is adequate.

During the September 2002 survey, sweetvetch was observed in the drainages adjacent to the disturbed area, but identification was not possible due to the plants early phenology. Conduct a survey of this sweetvetch, located in the drainage to the south of the pediment) to determine if this plant is the Canyon sweetvetch (R645-301-322). During the April 2002 survey, the Creutzfeldt plant, a BLM sensitive species, was not observed. The surface facility area, however, was determined to have suitable habitat for this species. The surface facility area must be resurveyed prior to construction for Creutzfeldt cryptantha and the results provided in the PAP prior to construction (R645-301-322).

The *Summary of Mexican Spotted Owl Habitat Survey Within the Lila Canyon Coal Lease Area* (App. 3-4) provides a plan for surveying owl habitat. The plan commits to an overview of the areas deemed suitable, based on the 1997 model, during the Spring 2002 raptor survey with an additional ground-truth survey in fall 2002. Suitable habitat will only be surveyed if impacts from subsidence are expected. The surveys will be submitted to DWR and

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USFWS for comments. To date, the PAP does not include the 2002 survey results or summary report specifically relating to the MSO. The mine must address the following requests of the plan (App. 3-4) for surveying owl habitat (R645-301-322.100):

- Survey all sites within a half mile radius of the mine permit area that are identified in the 1997 model as potential MSO habitat during the 2003 raptor flyover survey.
- Conduct a ground-truth survey.
- Address the following parameters during flyover and ground-truthing surveys:
 - All rugged areas including south-facing cliffs, ridgelines, and escarpments.
 - Steep-slope mixed conifer habitats.
 - 2x2 rule – canyons less than 2 km wide and at least 2 km long.
- Provide the Division with results of flyover and ground-truthing surveys. The Division will coordinate with USFWS and DWR to review the results.
- Submit a report that includes:
 - Map of the mine permit and buffer zones areas surveyed specifically for the MSO.
 - Raw data from the surveys.
 - Analysis or summary discussing actual and potential MSO habitat.

Findings:

Information provided in the application does not meet the minimum Fish and Wildlife Resource Information requirement of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-121, Present raptor information clearly. The Permittee must (1) Update information on peregrine falcon (2) Provide a current and complete list of TE species (3) Provide accurate information pertaining to raptor surveys: Correct nest number on the raptor map in Appendix 3-5 and map - Plate 3-1; Add 2002 survey date (4) Remove unrelated entries in Appendix 3-5: 1980 DWR letter on raptors; 1990 Letters; 1990 Raptor survey.

R645-301-322, Append the modified plan in Appendix 3-4 to include the Division's requests for conducting and reporting the MSO surveys. Conduct occurrence surveys, habitat impact assessments, and suitable habitat assessment.

R645-301-322.100, The entire area that may be affected and adjacent areas must be surveyed for raptors. The southwest section of the permit area appears as suitable cliff habitat. This area is outside the subsidence buffer zone but within the permit area and immediately adjacent to the buffer zone. Other rock outcrops are within the permit area and require surveys. Conduct a thorough survey during the 2003 (and subsequent-years) raptor survey of the southwest quadrants as well as other rock outcrops within and near the permit area.

R645-301-322, Describe the riparian habitat, and amphibian presence or the potential for amphibian occurrences for all springs and seeps. Submit all results and summary in the PAP.

R645-301-322(.000-.200), Address how the mining effects to Range Creek will affect the southwestern willow flycatcher at Range Creek.

R645-301-322(.000-.200), Provide the following: **(1)** Habitat impact assessments for the bald eagle **(2)** Quantitative water consumption impact assessment for bonytail chub, Colorado pikeminnow, Humpback chub, and razorback sucker. (R645-301-333; see below) **(3)** Occurrence surveys and habitat impact assessments for the San Rafael cactus, Creutzfeldt cryptantha, and Canyon sweetvetch **(4)** Suitable habitat assessments for the TE and sensitive plant species.

R645-301-358.510, Provide structural information and map layout of power poles and lines.

SOILS RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

Analysis:

Elevation of the proposed mine facility is from 5,800 to 6,500 feet. The Soil Survey (Section 3.2 of Appendix 2-3) indicates an average annual precipitation of 8-14 inches with the majority of the precipitation coming in Fall, Winter and early Spring. The soil resources within the Lila Canyon Extension are discussed in Chapter 2, Sections 210 through 224 of the PAP.

Mr. Daniel Larsen, Professional Soil Scientist with Environmental Industrial Services conducted an Order I soil survey of the disturbed area in August of 1998. His report is located in Appendix 2-3. (An addendum attached to Appendix 2-3 is for the proposed fan portal site soils.) The survey contains soil descriptions, soil pedon descriptions, soil salvage suitability analysis, laboratory soil testing data, field soil profile descriptions, soil and landscape photographs, a soils map, and a salvageable-soils map. All mapping and soil survey work were performed according to the standards of the NRCS's National Cooperative Soil Survey.

Soil Identification and Description and Productivity

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The predominant soil classification was Strych fine sandy loam, loamy-skeletal, mixed mesic Ustic Haplocalcid (formerly classified as Ustollic Calciorthids in the 1988 Carbon County Soil Survey).

Order: Aridisol (formed in desert climate)
Suborder: Calcid (accumulation of calcium carbonate)
Great Group: Haplocalcid (other calcids)
Subgroup: Ustic Haplocalcid
(moisture control section is dry less than $\frac{3}{4}$ of the time when the temperature is above 5 C and aridic soil moisture regime bordering on ustic)
Family: loamy-skeletal, mixed mesic (soil temperature)
Series: Strych fine-sandy loam
Phases: bouldery, very bouldery, extremely bouldery

Also found at the site were two soils with little pedogenesis and little horizonization, classified as Gerst silt loam, loamy, mixed (calcareous), mesic, shallow Ustic Torriorthents

Order: Entisol (young soil, little pedogenesis)
Suborder: Orthent (lack of clay accumulation)
Great Group: Torriorthent (aridic moisture regime)
Subgroup: Ustic Torriorthent
(moisture control section is dry less than $\frac{3}{4}$ of the time when the temperature is above 5 C and aridic soil moisture regime bordering on ustic)
Family: loamy, mixed (calcareous), mesic
Series: Gerst silt loam
Phase: shallow

and Travessilla fine sandy loam, loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents.

Order: Entisol
Suborder: Orthent
Great Group: Torriorthent
Subgroup: Lithic Ustic Torriorthent (lithic contact within 50 cm)
Family: loamy, mixed (calcareous), mesic
Series: Atchee Series (formerly Travessilla series)
Phase: none given

The soils were mapped using the following designations:

DSH = Strych fine sandy loam variant, 3 to 8% slopes
SBG = Strych bouldery fine sandy loam, 5 to 15% slopes
VBJ = Strych very bouldery fine sandy loam, 5 to 15% slopes
XBS = Strych extremely bouldery sandy loam, 10 – 45% slopes
RBL = Rubbleland- Strych-Gerst complex, 20 – 70% slopes

RBT = Rock outcrop – Travessilla family complex, Atchee Series

From the soil description sheets in Appendix 2-3 and Plate 2-2 Detailed Soils Map of the Mine Facilities Site, the Division notes that the canyon bench holds deep soils, stabilized from wind erosion by a surface layer of biological soil crusts, dried plant litter, boulders and live plant cover. The A horizon layer varies due to position on the slope from three inches (at sample site LC 1 through 3) to 26 inches deep (at sample site LC 4). The B horizon stretches from 31 – 60 inches in the profile and is the zone of accumulation of carbonates. The deepest soils are pockets of colluvium from the cliffs above. The soils are underlain by sandstone bedrock, except at the location of the fan portal where shale and burned coal cover the sandstone rock layer. Shale was also encountered at LC 3 and LC 5 (see discussion of SAR and EC below).

Soils are subject to extremes of temperature. On August 6, 1998 at 11:30 a.m., the temperature of the bare soil at location LC4 was 130 F. At a depth of 20 inches, the temperature was 65 F. These soils are in a mesic soil temperature regime. That means that the mean annual soil temperature at 50 cm is less than 59 F as estimated from the mean annual air temperature of 46 F, reported in Section 220. Mr. Larsen has judged the soil moisture regime to be aridic, bordering on ustic, which is to say that at a depth of 20 inches (50 cm), there is a difference in soil temperature greater than 9 F between summer and winter and the soil moisture control section from 12 – 35 inches deep for sandy soil is dry for 90 or more cumulative days in most years, but it is not dry in all parts for more than half the time that the soil temperature is above 9 F at a depth of 50 cm. (Soil Survey Staff. 1990. Keys to Soil Taxonomy, fourth edition. SMSS technical monograph no.6. Blacksburg, Virginia. pp 33 –35.)

The disturbed area vegetation is primarily pinyon-juniper and grass-shrub communities (see Figure 1, Appendix 3-2). On good years the grass-shrub can be expected to produce 600 – 800 lbs/acre and the pinyon-juniper can be expected to produce 250 - 300 lbs/ac (see Appendix 3-7).

Soil Characterization

Soil pedon descriptions were recorded on standard NRCS forms and are provided in Appendix D within Appendix 2-3. The soil horizons were sampled and analyzed according to DOGM guidelines for topsoil and overburden. (Leatherwood, J. and Dan Duce. 1988. Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining. State of Utah Department of Natural Resources, Division of Oil, Gas and Mining.) Soil texture, rock fragment content (percent by volume), and Munsell color were determined in the field. Generalized soil properties, including percent surface stones and boulders, are summarized in Table 3.21, Properties of Soil Map Units, on page 9 of Appendix 2-3. Soil sampling locations are shown on Plate 2-2, Detailed Soils Map of the Mine Facilities Site.

Soil samples were sent to InterMountain Laboratories, Inc. for analysis. Appendix C of Appendix 2-3 contains the laboratory data sheets for all analysis on the 22 samples and duplicate

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analysis. Overall, soil laboratory test results show a good rating for soil chemistry and fair rating for soil water holding capacity after correction for coarse fragments (Appendix B of Appendix 2-3), except as noted below:

LC1 was rated poor for water holding capacity below 10 inches (after coarse fragment correction)

LC3 was rated poor at depth of 24 – 48 inches for pH = 8.6

LC3 was rated unacceptable at depth of 48 – 53 inches for Sodium Adsorption Ratio (SAR) = 18 and Exchangeable Sodium Percentage (ESP) = 22%

LC5 was rated poor below three inches for water holding capacity and unacceptable for coarse textured soils at depth 40 – 58 inches for SAR = 15, Electrical Conductivity (EC) = 8.89 mmhos/cm, and pH 8.2.

LC10 was rated fair at 0 – 4 inch depth for an EC = 2.58

LC 11 and LC 12 entire profiles were rated poor for water holding capacity after correction for coarse fragments.

The percent rock content within the proposed facilities area is the main deterrent for soil salvage suitability based on the current Division guidelines (citation previously noted). However, Appendix 2-3 indicates that native soils, with a higher rock content than the current guidelines allow, can and should be salvaged.

Organic matter content is relatively low in these soils. Generally, the surface soils ranged between 1.0 to 1.5% organic matter and the subsoils were about 0.5 percent. Total nitrogen and available phosphorus were not analyzed. A measure of total nitrogen and available phosphorus is required by the Division for baseline information so that fertilization of the reclaimed site can attempt to mimic the natural conditions.

A calcic horizon was verified in soil pedons LC1, LC5 and LC6 with calcium carbonate ranging between 20 to 21%. Pedons LC3 and LC4 have some calcium carbonate accumulation in the subsoil but it is less than the 15% needed to be classified as a calcic horizon. Below the calcic horizon, at depths of 30 inches, the soluble calcium decreases and magnesium increases with depth. Usually, the reverse is the case where calcium exceeds magnesium in the soil solution, because calcium is retained much more readily than magnesium on soil colloid exchange sites. But in this case, calcium is being removed from the soil solution by calcium carbonate precipitation in the calcic layer. As a result, soluble magnesium exceeds soluble calcium in the lower soil horizons.

In accordance with R645-301-232.200, since the A horizon is less than six inches deep, the topsoil recovered will be a mix of both the A and B horizon soils. Depths of salvage range from 6 to 18 inches over the site (see Available Soil Resources table in Section 232.100). Large stones, 36 inches or less, are considered part of the soil layer and are included in the topsoil volume estimates.

The Division evaluated this new permit application for the first time in June 2002 and requested baseline soils analysis of total nitrogen and available phosphorus for the six soil map units. The Permittee maintains that this information should have been requested prior to the initial soil survey in 1998. Although it is unfortunate that the information was not specifically requested by Division staff in 1998, the Division's 1988 guidelines clearly indicate that the analysis of topsoil will include nitrogen and phosphorus to provide baseline information. This nutrient information will be utilized at final reclamation to determine the appropriate fertilization rate for the redistributed topsoil.

Findings:

The information did not provide baseline soil nitrogen or phosphorus as required by the 1988 Utah Guidelines for topsoil and overburden. Prior to approval and in accordance with:

R645-301-222.400, The Permittee should provide baseline soils analyses of total nitrogen and available phosphorus for the six soil map units.

LAND-USE RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.22; R645-301-411.

Analysis:

Premining land uses of the proposed extension to the permit area include grazing, wildlife habitat, coal mining, and limited recreation (Appendix 4-2). Grazing allotment boundaries are shown on Plate 4-2, and wildlife habitat is shown on Plate 3-1. Production in the grazing allotments in terms of animal unit months is shown in Table 4-3. Portions of the permit area fall within the boundaries of the Turtle Canyon Wilderness Study Area, the Desolation Canyon Inventory Unit #8, and Turtle Canyon Inventory Unit #4 (Plate 4-4).

Lila Canyon is within an area identified by the BLM as the Range Valley Mountain Habitat Management Plan Area (Vol. 4, page 3). A habitat management plan was adopted in 1991 to provide management of wildlife and for access management.

The PAP states that the proposed extension to the permit area does not support a wide variety of land uses because of the limited access and remote location, rugged topography,

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limited soils, and lack of rainfall and surface water. Water rights are discussed in Chapter 7, and water uses include stock watering and various uses for coal mining.

The land is zoned by Emery County for mining and grazing. A small portion of the proposed permit area extension overlaps with the Turtle Canyon Wilderness Study Area. The application states that a copy of the BLM's 1993 environmental assessment prepared for management of the Turtle Canyon Wilderness Study Area is found in Appendix 4-1. Appendix 4-1 is the cultural resource information.

Boundaries of the Desolation Canyon Inventory Unit have been changed by the BLM (January 2002). Plate 4-4 shows areas for:

- Turtle Canyon Inventory U#4
- Turtle Canyon WSA
- Desolation Canyon Inventory U#8
- Permit Area with the proposed surface facilities demarcated.

The permit area boundary overlaps areas of: Turtle Canyon Inventory U#4, Turtle Canyon WSA, and Desolation Canyon Inventory U#8 boundaries. The proposed surface facilities boundary follows along the Desolation Canyon Inventory U#8 boundary, but does not overlap. Almost all of the permit area is in a wilderness inventory unit or study area, only the Little Park Wash road and the mine site have been excluded. Lease readjustment for U-0126942 restricts surface occupancy in the Turtle Canyon Wilderness Study Area. The lease readjustment can be modified if it interferes with the lessee's right to explore, access, and extract the coal resource, because the lease is a valid existing right.

The BLM's 1999 Utah Wilderness Inventory identifies areas with wilderness character in addition to the previously identified wilderness study areas. Two of these areas overlap the proposed extension to the permit area including the proposed disturbed area. The application includes copies of two memoranda from the BLM. One of these says, "While the planning process is being completed on lands found to have wilderness characteristics in the 1999 Wilderness Inventory, the management prescriptions of existing land management plans do not change." Therefore, it appears the BLM will be managing these lands as in the past until further assessment has been completed.

There have been previous mining activities in Lila Canyon. The road at the bottom of Lila Canyon was built in the 1950's to provide access for coal exploration. The PAP discusses an unknown road leading up an undefined "left fork" to a coal outcrop. The coal seam was exposed and mined. There is also mention of an old portal used for ventilation, two sealed breakouts, and a site for 1950's Lila Canyon fan (sec. 411.200; pg. 16). Two sealed breakouts are located in the left fork of the canyon where the Sunnyside Coal Seam was exposed. Coal was transported back through the Horse Canyon Mine. It is not clear if the coal prospect and the breakouts are the same. It is believed the breakout was opened during the 1950's. This breakout

was utilized post-1977 and is included in the permit area. The Coal Regulatory Program, therefore, has jurisdiction over this disturbance. Clearly define and map (on Plate 4-1) all of these mining structures and the partial road(R645-301-121.200).

Findings:

Information provided in the application is not considered adequate to meet the minimum Land Use Resource Information requirement of the Regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-120, Clearly define and map (on Plate 4-1) all of the mining structures and the partial road (R645-301-121.200).

ALLUVIAL VALLEY FLOORS

Regulatory Reference: 30 CFR 785.19; 30 CFR 822; R645-302-320.

Analysis:

Alluvial valley floor determination

This section summarizes the land use, soil, plants, geology, surface- and ground-water information reviewed by the Division in making the findings required under R645-302-320.

The Lila Canyon Extension is situated in the western Book Cliffs escarpment. Steeply dipping joints transmit ground water from the surface (6.5.3.5) as illustrated in Figure VI-5. Water inflow associated with fault or fracture systems are possible, but not expected to be significant (Section 6.6.1). The surface expressions of the faulting are grabens and draws. Numerous small seeps and springs exist within and adjacent to the permit area (Section 731.220). Appendix 7-3 Probable Hydrologic Consequences (PHC) of mining concludes that the proposed mine is not expected to cause "contamination, diminution or interruption" of underground or surface sources of water.

The Sunnyside Sandstone contains the two seams of interest: Upper Sunnyside and Lower Sunnyside Seams. "The Sunnyside Sandstone is known to transmit groundwater in the Sunnyside area and that portion of the sandstone which underlies the Lower Sunnyside seam is occasionally considered to be a potential aquifer" (Section 6.4.1). Geneva Mine (now known as the Horse Canyon Mine) records indicate that the mine was dry until the Sunnyside Fault was intercepted. This suggests that as mining progresses down dip, "substantial" water may be encountered, but this water will be isolated from the surface recharge zone (Section 6.6.3.1).

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The Mancos Shale forms the slopes below the base of the Book Cliffs, overlain in places by pediment deposits (Section 6.4.1 and Plate 6-1). In the permit area, drainages flow in response to snow melt and precipitation events (Section 731.220 and Plate 7-1). Coleman Wash receives the Lila Canyon drainage. Grassy Wash and Marsh Flat Wash collect the flow from the Mancos slopes further south. Little Park Wash channels the flow on the plateau above. There is no valley holding a perennial stream in the permit area (Section 724.700).

Order III soil survey (Plate 2-1) of the mine permit area soils indicates that the soils on the plateau in Little Park Wash are Neto Fine Sandy Loam (Section 220.200). No further information on this soil is available in the PAP. This soil is comparable to the Glenberg soil described in the published Carbon County Soil Survey, according to Mr. Leland Sasser (telephone conversation between Priscilla Burton of DOGM and Mr. Leland Sasser, Soil Scientist and Survey Project Leader with the NRCS, Price Field Office, Utah on 06/05/01).

Plate 3-2, Vegetation indicates that the dominant species growing on the plateau in the vicinity of Little Park Wash are Atriplex, Artemesia and Elymus, none of which are wetland species, according to Cooper. (Cooper, David J. 1989. A Handbook of Wetland Plants of the Rocky Mountain Region. EPA Region VIII.) Little Park Wash falls within the Little Park grazing allotment (Plate 4-2). The land use is unimproved rangeland and wildlife habitat.

There is no farming activity upstream or downstream of the permit area, therefore, the proposed operations will not interrupt, discontinue, or preclude farming on an alluvial valley floor. Based on the information provided in the plan, in accordance with R645-302-321.100, the Division determines that there is no probable existence of an alluvial valley floor. A final determination will be made after all requested resource information has been received.

Findings:

A final determination regarding the existence of an alluvial valley floor will be made after all requested resource information has been received.

PRIME FARMLAND

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

Analysis:

The Natural Resources Conservation Service (NRCS) determined in 1998 that there are no Prime Farmlands at the site (see Appendix 2-1).

Findings:

The Division concurs with the NRCS determination made in 1998 that there are no Prime Farmlands at the site.

GEOLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

Analysis:

Geologic information includes a description of the geology of the proposed permit and adjacent areas down to and including the stratum immediately below the lowest coal seam to be mined. The coal seams and adjacent strata include a saturated zone that will almost undoubtedly be intercepted by mining. Geology influences the occurrence, availability, movement, quantity, and quality of potentially impacted surface and ground water.

Local, perched bedrock and alluvial aquifers in Little Park Wash and along Patmos Ridge are separated from the saturated zone by a thick section of low permeability strata. These aquifers support small discharges from seeps and springs scattered across ground-water emergence zones and located mostly in the bottoms of various small drainages.

The plan includes geologic information in sufficient detail to assist in determining the PHC of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and ground-water monitoring is necessary, and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. Resource maps and plans and site specific information are based on published geologic information, permit plans of the adjacent Sunnyside and South Lease areas, and exploration and drilling records of Kaiser Steel, U. S. Steel Corporation, and Intermountain Power Agency (IPA).

SUWA has raised concerns that there is not sufficient resource information to allow determination of the PHC. In the informal conference, SUWA expressed particular concern that there is not sufficient resource information for Range Creek drainage to evaluate the potential for adverse impacts.

The Division has determined that it is reasonable not to include the Range Creek drainage in the PHC determination because adverse impacts to resources in Range Creek drainage are not reasonably expected. To clarify for the public record why Range Creek drainage will not be adversely impacted, the Division has required that the Permittee augment geologic and other resource information in the PAP to include the Range Creek drainage. Chapter 7 contains a geologic map and cross-section (Plates 7-1A and 7-1 B) that include Range Creek drainage, and

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the geology of the Range Creek drainage is discussed in Chapter 7 and the PHC. The PHC includes an evaluation of why adverse impacts to the Range Creek drainage are not probable.

Seeps have recently been found in a deeply incised canyon located at the southwest corner of the Lila Canyon Extension. Geologic information for this area is adequate for the requirements of the Coal Mining Rules.

Boreholes S-1 through S-23 were drilled between 1948 and 1975. S-24 through S-32 were drilled in 1980 and 1981. In 1993 and 1994, IPA-1, IPA-2, and IPA-3 were drilled. IPA-1, IPA-2, and IPA-3 were completed as piezometers in 1994. Copies of borehole logs for IPA-1, IPA-2, IPA-3, S-14, S-27, and S-32 are in Appendix 6-1: logs for the other boreholes are confidential and not available to the public. The borehole logs show lithologic characteristics, including physical properties and thickness of each stratum that may be impacted. In addition to the boreholes, coal seams and adjacent strata were measured at seventeen outcrop locations in 1974 and 1975. Lithology and thickness of the coal seams and adjacent strata, based on the boreholes and measured out-crop sections, are shown on Plate 6-5. Locations of the boreholes and outcrop measurements are on Plate 6-2.

Acid- and Toxic-forming Materials

SUWA has raised concerns that analyses for acid- and toxic-forming materials in the strata above and below the coal seam to be mined have not been done. Because the strata above the Sunnyside Seam - the coal seam to be mined - will not be removed, the Coal Mining Rules require that samples be collected and analyzed from test borings, drill cores, or fresh outcrops (R645-301-624.200).

Drill-logs in Appendix 6-1 note that pyrite was visible in many cutting or core samples, indicating acid- and toxic-forming potential in strata above and below the Sunnyside Seam.

Strata above and below the Sunnyside Seam were sampled in boreholes S-24 and S-25, and results of analyses for potentially acid- or toxic-forming materials are in Appendix 6-2. Two of twenty-one samples had over 1 percent total sulfur, the highest being 1.26 percent. Maximum pyrite content was 0.74 percent, in the sample with the highest total sulfur. All samples had acid-base potentials greater than $(-5 \text{ tons CaCO}_3)/(1000 \text{ tons of material})$. The proposed location for the Lila Canyon Extension access slopes is approximately three miles north of boreholes S-24 and S-25, but the access slopes will pass through lower Blackhawk strata similar to those tested at these two boreholes.

Planned mining will leave a roof and floor of coal, so the analyses of floor and roof material from IPA-1, IPA-2 (roof only), and IPA-3 in Appendix 6-2 are pertinent to the requirement for analysis for acid- and toxic-forming materials in the strata immediately above and below the coal seam to be mined. Appendix 6-2 also contains analysis results for the "middle" coal samples from the three IPA bore holes. For all samples, pyritic sulfur (dry basis)

ranged from 0.07 percent to 0.48 percent and total sulfur from 0.70 percent to 1.17 percent (Appendix 6-2).

Characteristics of the Blackhawk Formation are consistent over large areas and do not vary widely or change abruptly; the data on acid- or toxic-forming materials boreholes S-24 and S-25, along with information from other coal mines in the Book Cliffs coal field, provide good indications of expected acid- or toxic-forming characteristics of the rock that will be encountered in constructing the proposed Lila Canyon access slopes.

In a letter dated April 22, 2002, UEI requested exemption from R645-301-624. A copy of the letter is included in Appendix 6-2. The requested exemption is based on the following:

- A statement from the BLM's Environmental Analysis for lease U-32083 that there is no history of problems with acid- or toxic-forming materials at the nearby Sunnyside Mine, which operated for over 80 years;
- Analyses from boreholes S-24 and S-25 located two miles south of the Lila Canyon Extension permit area provide the required information on the strata that will be encountered during construction and operation of the Horse - Lila Canyon Mine;
- All material brought from the mine during construction and operation will be treated by burial as though it is acid- or toxic-forming; and
- Coal-mine waste brought to the surface by mine construction and operation, including slope-rock underground development waste, will be tested for acid- or toxic-forming potential before burial.

Although it is true that there have been no problems with acid- or toxic-forming materials at the nearby Sunnyside Mine, acidic slurry-pond water carrying iron and other minerals seeped from the base of a refuse pile. The environment in the receiving channel raised the pH and reduced the mineral load. Even though there were no offsite problems or impacts because of the buffering environment, the potential for acid and toxic mine drainage clearly exists in coals and waste materials in the Book Cliffs Coal Field.

The Lila Canyon Extension refuse pile is designed for handling and burial of coal mine waste in a manner that will minimize infiltration of water into the pile, minimize the formation of acid or toxic drainage, and minimize acid, toxic, or other harmful infiltration to ground-water and drainage or discharge to surface-water. Based on the design of the refuse pile, the reclamation plan and the geology, hydrology and climate of the area, the Division has found that the probability of acid- or toxic-impacts from the materials to be placed in the refuse pile is small.

Nevertheless, the Permittee has committed to periodic sampling of the materials to be placed in the refuse pile as a further precaution. Samples will be collected and analyzed five times during construction of the rock-slope tunnels and from every 6,000 tons of waste rock placed on the refuse pile during mine operation: parameters are in Table 2 of Appendix 5-7.

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The reclamation plan specifies 4 feet of subsoil and topsoil will be placed over the refuse pile. The slope-rock underground development waste used to build the pads will be left in place for final reclamation and buried with 4 feet of subsoil and topsoil (Chapters 2, 5, and 7, and Appendix 5-7).

Because the Permittee uses the Sunnyside Mine as an example of why there is no need to perform further analysis of samples from test borings or cores for acid- and toxic-forming materials, the PAP needs to better or more clearly and concisely explain how the handling and disposal of coal mine waste at the Lila Canyon Extension is designed to avoid acid- and toxic-drainage such as occurred at the base of the Sunnyside Mine refuse pile. This is partially explained in Appendix 5-7 – that the refuse pile will not contain reject from coal washing and is to be placed in a pit and covered with 4 feet of subsoil and topsoil rather than left exposed on the surface. The Permittee identified several differences between the Sunnyside and proposed Lila refuse piles in the cover letter for the December 6, 2002 submittal, but this information needs to be included in Section 6.5.5.1 of the PAP.

As mining proceeds, materials overlying and underlying the coal seam can be exposed to water and oxygen underground, within the mine, and there is some potential to generate acid or toxic products. Rocks of the Mesaverde Group are carbonaceous, so persistence of acids and related toxins in water in the mine and adjacent strata is unlikely: the analyses from boreholes S-24 and S-25 show acid-base potentials from all analyzed zones is greater than –5 tons CaCO_3 /1,000 tons material. The mine is designed so there will be no natural discharge or drainage from the portals. Discharge pumped from the mine will be subject to federal and state water-quality standards under the UPDES permit, and the discharge will be more thoroughly analyzed quarterly under the proposed operational monitoring plan in the PAP. Adverse impacts, and particularly material damage, from formation of acid or toxic water within the mine are unlikely.

As authorized under R645-301-626, the Division is waiving further analyses of samples from test borings or cores for acid- and toxic-forming materials in the strata immediately above and below the coal seam, although some additional discussion - contrasting refuse piles and related problems at the Sunnyside Mine with proposed refuse disposal at the Lila Canyon Extension - is being required to clarify the record in the PAP.

Engineering Properties

Engineering properties of the strata immediately above and below the coal seam to be mined are listed in Table 6-6. Data are based on core samples from boreholes S-18 and S-22.

Bore Holes

S-32 was drilled in 1981 in SE1/4SW1/4 Sec. 6, T. 17 S., R. 15 E., south of the Lila Canyon Extension area, and completed as a piezometer in the lower Grassy Member and Upper

Sunnyside Seam of the Blackhawk Formation. The Permittee has included the drill-log, a Chronology of Development, and Water Pump Tests and Samples in Appendix 6-1. At least four water level measurements and one suite of water-quality analyses were done at S-32 in 1981 and 1982. The Permittee visited this piezometer, attempted to measure water levels, but found S-32 unusable; this is discussed in the cover letter for the December 6, 2002 submittal, but this information has not been included in the PAP.

IPA-1, IPA-2, and IPA-3 were completed as piezometers in 1994. Water levels were measured from 1994 through 1996, and the Permittee resumed measurements in 2000.

The unnamed boring that the Permittee intends to use as a water-supply well (identified by the Division as the Horse Canyon Well), and the Minerals Development Corporation (MDC) Well (Plate 7-1) were bored in Horse Canyon to monitor water in the alluvium (Section 6.5.1). Kaiser Steel installed three piezometers, A-26, A-28, and A-31, which are no longer accessible, in the alluvium of Little Park Wash. The PAP briefly mentions A-26 and A-31 on page 11 (Chapter 7), but there are no hydrologic or geologic data from these piezometers in the PAP. Sites A-26 and A-31 were mentioned in the Horse Canyon Mine Plan; however, these sites were drilled in 1981, and no data are available as to location or water quality. The Permittee considers A-26, A-28, and A-31 non-usable.

Fluid levels were reported for several boreholes. In some cases, the fluid reported in boreholes appears to have been drilling fluid rather than ground water: borehole S-26 was completed as a piezometer in August 1980 but was dry within a month of completion and was subsequently cemented to the surface.

Stratigraphy

Stratigraphy of the Blackhawk Formation is described on pages 3 – 10 of Chapter 6. The Sunnyside Member, which is dominantly sandstone, includes the Upper and Lower Sunnyside Coal Seams, with the Grassy Sandstone above the coals and the Sunnyside Sandstone beneath them. The Horse Canyon Mine operated in the Lower Sunnyside Seam, which is also the seam that is planned to be mined in the Lila Canyon Extension.

Saturated Strata

A large section of the Horse Canyon Mine, including the Geneva exploration tunnel and the rotary dump, are below the water level indicated in the IPA piezometers. The PAP reports that, generally, underground flows from rock slopes and gob areas into the Horse Canyon Mine were small. Only when the mine intercepted the Sunnyside Fault in deeper, down-dip areas was significant water encountered. Prior to suspending operations, the mine pumped water from the workings near the Sunnyside Fault to keep them from flooding. Some of the water was used for mine operations; the rest was discharged intermittently to the surface.

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Coal at the Horse Canyon Mine is underlain by the Sunnyside Sandstone, a marine sheet sandstone. Lines (1985) did extensive petrographic work on porosity and permeability in the similar Star Point Sandstone in the Wasatch Plateau; Table 1 of the PHC lists permeability values determined by Lines for the Star Point Sandstone, as well as values for the Blackhawk Formation at the Soldier Canyon Mine.

Much of the Horse Canyon Mine is below the potentiometric surface indicated by the IPA piezometers and the car-dump sump. Because the Sunnyside Sandstone, which underlies the Lower Hiawatha Coal Seam, is known to transmit groundwater in the Sunnyside area, it is occasionally considered as a potential aquifer. No ground water entered the Geneva – Horse Canyon Mine from these underlying sandstones (Page-8, Chapter 6). Rather, water entered the Horse Canyon Mine in large amounts only where the Sunnyside Fault was intercepted in deeper, down-dip areas of the Horse Canyon Mine. The PAP describes the floor under the Sunnyside Seam in the Horse Canyon Mine as containing both sandstone and shale. Possible explanations for the dryness of the Horse Canyon Mine before the Sunnyside Fault was encountered are briefly discussed in the PAP (pages 8 and 9):

- Shales in the mine floor could have impeded ground-water flow into the mine;
- The sandstones under the coal were not saturated;
- They lacked sufficient hydraulic conductivity to transmit water;
- Most of the mine simply was not deep enough to encounter a saturated zone;
- There was unreported inflow where the mine encountered a saturated zone; or
- The east-west faults isolated the mine from saturated zones around the IPA piezometers.

Regardless of the reason, the Horse Canyon mine was relatively dry despite being below the potentiometric surface indicated by the IPA piezometers. This is consistent with experience throughout the Book Cliffs and Wasatch Plateau Coal fields and indicates that the sandstone units are isolated vertically and laterally by low-permeability siltstones and mudstones, with poor interconnectivity and communication between them. The Division anticipates that the Lila Canyon Extension will be similar to the Horse Canyon Mine: there will be little water inflow from unfractured rock and inflow from east-west trending faults will be localized (the mine is planned to avoid the Sunnyside Fault).

Minor inflows of water are anticipated from the Geneva exploration tunnels (Page-36, Chapter 6). Because underground exploration work performed by BXG in 1993 found water in the Horse Canyon Mine at approximately 5,870 feet, the PHC (Appendix 7-3, p. 8) assumes that the Geneva exploration tunnel is flooded, that the tunnel will be intercepted by mining operations in the Lila Canyon Extension, and the water from the tunnel - in excess of what will be used in coal production - will need to be pumped from the mine.

Saturated strata in the lower Blackhawk Formation are separated from the perched zones in the upper Wasatch Group by upper Blackhawk, Price River and undifferentiated North Horn-Flagstaff Formations, strata that contain approximately 80 percent clays, shales, siltstones, and mudstones. Plastic or swelling clays that can seal faults and fractures and inhibit lateral and vertical flow of ground water are abundant (Hydrology, Page-7-8). *Fisher and others 1960*, which is listed in the References of Chapter 6, is given as the reference for percentage of clay.

Structure

The Sunnyside Fault, other faults, the elevation of the Horse Canyon Mine workings – in particular where the Sunnyside Fault was encountered and water flowed into the Horse Canyon Mine, and other potentiometric, geologic, and hydrologic information relevant to understanding the ground water in the saturated strata of the Blackhawk Formation are discussed in section 724.100 and shown on Plate 7-1. The PAP states that the last observed water elevations are on Plate 7-1 (Section 724.199, p. 11). The 5,870 feet water elevation in the Horse Canyon Mine that is shown on Plate 7-1 was determined from underground work performed by BXG in 1993. This BXG work is briefly discussed in the PHC (Appendix 7-2, p. 8) but not in Section 724.100, so this reference to the “last observed water elevations” - without giving the 1993 date - at the end of the paragraph discussing the 1986 measurement at the rotary car dump in Section 724.100 (p. 11) is confusing. The conclusion that water levels haven’t changed since mine operations ceased (Section 724.199, p. 11 and Appendix 7-3, p. 9) is also questionable without including the BXG data in the discussion. Information on the BXG exploration needs to be added to Section 724.100.

Because the water level in the mine in September 1982 (last sampling of 2 Dip) must have been near the elevation (5,827 feet) of 2 Dip sample site and the 1986 level is also very near this elevation (perhaps below it), it appears as though the water level in the mine has changed little since operations ceased.

The PAP states in Section 724.100 on page 6 that there are no observable discharge points in the lower Blackhawk Formation, and on page 9 that there are no springs below the Price River Formation. It states in section 731.520 that no water issues from the strata above or below the coal outcrop (although this is not clear - this statement may refer only to the area immediately around the proposed portals). The springs in Stinky Spring Canyon issue at the contact of the Blackhawk Formation and Mancos Shale, so these statements need to be updated, corrected, or otherwise clarified.

The coal seam crops out at an elevation of approximately 6,500 feet in the vicinity of the rock-slope tunnels. The plan indicates the tunnels will intercept the coal seam at approximately 6,300 feet (Appendix 8-2 - Figure 7-1).

Underground mining always has a potential for impacting surface water, ground water, and other surface resources. The PAP states in Section 721 that subsidence effects are expected

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to be minimal due to the amount of cover and massive rock strata between the mining and the surface. Coal-seam elevations determined from boreholes are on Plate 6-4 - Cover and Structure Map. Geologic information is sufficient to assist in preparing the subsidence control plan.

Faults

SUWA has raised concerns that effects of faults on movement of ground water are ignored, especially in the "regional aquifer". The PAP contains a description of regional geology and hydrology, including faults and their interaction with ground water. Faults can effect direction and magnitude of ground-water flow; however, fault gouge and plastic or swelling clays can seal faults and fractures. Based on experience from the Horse Canyon Mine, little ground-water inflow is expected from the east-west faults. The major inflow was from the Sunnyside Fault, and interception of the Sunnyside fault by mining operations in the Lila Extension is not anticipated.

Fault locations on Plates 6-1, 6-2, and other maps are based on previous mapping, drilling, exposures at the outcrop, fault interceptions in the Horse Canyon Mine and Geneva exploration tunnel, and information from drilling.

Vertical displacements of faults in the area range from 15 feet to more than 275 feet, with displacement diminishing toward the east (Section 6.5.3.3; Table 6-5). Vertical offset at the outcrop is 205 feet on the Central Graben Fault and 195 feet on the Williams Draw fault. The Entry Fault is offset 50 feet in the central part of the lease, but offset may disappear before reaching the outcrop. (Plate 6-2). En-echelon faulting or fracturing near major displacements is common in the Geneva Mine, particularly in the transverse, easterly trending normal-fault systems. Roof falls have been abnormally high in these areas, even though the strata indicate competent roof rock.

Faults may affect flow, direction, and magnitude of both lateral and vertical flows (Section 724.100). Subsurface water inflow associated with fault or fracture systems are possible; however, conditions are not expected to be significantly different than those associated with the Geneva, Columbia, and Sunnyside mines, so ground-water inflow from faults and fractures systems is not expected to be significant in the Lila Canyon Extension (Section 6.6.1).

Ground water conditions in the Lila Canyon Extension are projected to be similar to those in the Geneva and Sunnyside Mines and, where little or no water was observed in the raise areas within .25 to 1 mile of the coal outcrop. Flows of water encountered while mining were reduced to seeps or dry up in a short period of time, so this water is thought to have been "in place" with little or no recharge. Drill holes in the South Lease property below Williams Draw did not encounter groundwater within 1 to 1.25 miles of the coal outcrop, so subsurface water is not expected near the cliff escarpment at the Lila Canyon Extension (Section 6.6.3.1).

Findings:

R645-301-731.111, 731.121, Because the PAP uses the Sunnyside Mine as an example of why there is no need to perform further analysis for acid- and toxic-forming materials, the PAP needs to better explain how the handling and disposal of coal mine waste at the Lila Canyon Extension is designed to avoid the acid- and toxic-drainage such as occurred at the Sunnyside Mine refuse pile. This is partially explained in Appendix 5-7 – that the refuse pile will not contain reject from coal washing and is to be placed in a pit and covered with 4 feet of subsoil and topsoil rather than left exposed on the surface. The Permittee identified several differences between the Sunnyside and proposed Lila refuse piles in the cover letter for the December 6, 2002 submittal; this information needs to be included in Section 6.5.5.1 of the PAP.

R645-301-120.122, The PAP states that the last observed water elevations are on Plate 7-1 (Section 724.199, p. 11). The 5,870 feet water elevation in the Horse Canyon Mine that is shown on Plate 7-1 was determined from underground work performed by BXG in 1993. This BXG work is briefly discussed in the PHC (Appendix 7-2, p. 8) but not in Section 724.100, so this reference to the “last observed water elevations” - without giving the 1993 date - at the end of the paragraph discussing the 1986 measurement at the rotary car dump in Section 724.100 (p. 11) is confusing. The conclusion that water levels haven’t changed since mine operations ceased (Section 724.199, p. 11 and Appendix 7-3, p. 9) is also questionable without including the BXG data in the discussion. Information on the BXG exploration needs to be added to Section 724.100.

R645-301-120.122, The PAP states in Section 724.100 on page 6 that there are no observable discharge points in the lower Blackhawk Formation, and on page 9 that there are no springs below the Price River Formation. It states in section 731.520 that no water issues from the strata above or below the coal outcrop (although this is not clear - this statement may refer only to the area immediately around the proposed portals). The springs in Stinky Spring Canyon issue at the contact of the Blackhawk Formation and Mancos Shale, so these statements need to be updated, corrected, or otherwise clarified.

HYDROLOGIC RESOURCE INFORMATION

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

Analysis:

General Information

The Board of Oil, Gas, and Mining previously expressed concerns that the Permittee has failed to provide sufficient surface water quality and quantity information to demonstrate seasonal variation. The Board directed the Permittee to collect quantitative and qualitative data for all surface water sources **before** the Division may issue a permit. The Permittee must provide data acquired from monitoring and surveying of all streams and channels in, and adjacent to, the permit area. From data collected during this surveying and monitoring, the Permittee will characterize the flow patterns of all surface waters on, and adjacent to, the permit area. The Division has determined that segments of stream channels could be characterized as ephemeral, intermittent, or perennial.

Channel characterization based on survey data should include water table elevations (with respect to channel surface), biologic (plant and aquatic) communities present, and classification as established in the definitions under R645-301-100. The Permittee should also make descriptive adjustments based on the life of the mine to incorporate unusual wet or dry periods that may confound average rainfall and runoff conditions.

The Permittee has attempted to characterize the channels; however not all data has been collected, assessed, and placed in a practical form to characterize the channels and the presented data is not sufficient. The Permittee has defined the channels based on the total reach and not segments. The Permittee should consider drafting a table to identify the segments of reaches and listing the data mentioned in the categories above into that table. The headings of the table should include: Stream Segment, Gradient, Bed Type, Flora (or vegetation along channel), Fauna, Flow (or water level), and Use. Based on this information, the Permittee can discuss the probable impacts that mining may have on the channel segments, and the proper mitigation for such impacts.

The Permittee must support stream channel characterizations with water monitoring data, or survey data. Characterization of the flow type is required to assess the degree of probable mining impacts. The Rules do not allow mining beneath perennial or intermittent streams unless a Permittee can prove that no adverse impacts will occur to the resource. It is possible to define intermittent stream channels in two ways: based on area; or by analyzing the flow/water level (water table) and vegetation types in the channel, **and resource use**. Characterization of the channel is necessary to assess the amount of water available to meet the resource requirements, determine probable impacts from mining, and identify the feasibility of mitigation and

reclamation. The Permittee has not provided sufficient information to characterize all of the stream channels on, and adjacent to, the permit area.

The Permittee presents surface water information in Chapter 7 for the undisturbed and disturbed drainage areas. Springs are generally considered groundwater, because they present the water quality characteristics of the underground resources. As spring water flows down channel, away from the source, the quality and flow can change. After some distance, the flow is considered surface flow. The Utah Coal Mining Rules, R645-301-100 define perennial, intermittent, and ephemeral streams as follows:

"Ephemeral Stream" means a stream which flows only in direct response to precipitation in the immediate watershed, or in response to the melting of a cover of snow and ice, and which has a channel bottom that is always above the local water table.

"Intermittent Stream" means (a) a stream, or reach of a stream, that drains a watershed of at least one square mile, or (b) a stream, or reach of a stream, that is below the local water table for at least some part of the year and obtains its flow from both surface runoff and groundwater discharge.

"Perennial Stream" means a stream or part of a stream that flows continuously during all of the calendar year as a result of groundwater discharge or surface runoff. The term does not include intermittent stream or ephemeral stream.

To determine if there are any impacts from mining, there are specific operational monitoring requirements for each stream type: monthly sampling for all perennial sources, monthly sampling during periods of flow for intermittent streams, and quarterly surveys for all ephemeral drainages. In Section 731.220 of the PAP, the Permittee has committed to monitor surface water flows according to Table 7-3 (p. 35, Vol. 6) and to monitor for water quality in accordance with the DOGM Water Monitoring Guidelines.

The Permittee has established several surface monitoring site locations within the proposed permit area (see Plates 7-4 and 7-1). In Tables 7-2 and 7-3, the Permittee identifies the sites by name, location, description, ownership, and use. The Permittee has been collecting, and continues to collect, water quality and flow data for these sites. The Permittee describes the flow and quality trends displayed by the data in Appendix 7-1.

Sampling and Analysis

Baseline samples collected in 1993, 1994, and 1995 (Appendix 7-6) were analyzed using the methods in Standard Methods or 40 CFR 136. The Permittee commits to conducting all water-quality analyses performed to meet the requirements of R645-301-723 through -724.300, -724.500, -725 through -731, and -731.210 through -731.223 according to the methodology in the current edition of "Standard Methods for the Examination of Water and Wastewater" or the methodology in 40 CFR Parts 136 and 434. The Permittee will conduct water-quality sampling will according to either methodology listed above when feasible (Section 723).

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The Permittee has established surface monitoring sites in Lila Canyon Wash (L-1-S), the Right Fork of Lila Canyon (L-2-S), and below the disturbed area in Lila Canyon Wash (L-3-S). The Permittee provides monitoring information in Appendix 7-1 for these sites.

The Permittee presented information in Appendix 7-7 that describes the newly named Stinky spring Wash. This area drains southward through the permit area. The Permittee has submitted some information in Appendix 7-1 for Little Park Wash, Williams Draw, and the wash below L-12-G. There is no water monitoring information or site location for Stinky Spring Wash in Sections 14 and 23, T.16S., R.14E.

The Permittee presents monthly monitoring information from July 2000 to October 2002 for sites L-1-S, L-2-S, and L-3-S. Drainage basins over one square mile in area define Lila Canyon Wash, Little Park Wash, and Stinky Spring Wash as (at least) intermittent. The Right Fork of Lila Canyon Wash (Coleman Wash) is ephemeral.

The Permittee has also established sites L-4-S, the sedimentation pond discharge, and L-5-G, a potential mine water discharge site. Both L-4-S and L-5-G are UPDES sites and are currently non-functional. The Permittee plans to discharge both UPDES sites into the Right Fork of Lila Canyon Wash (Coleman Wash). The Permittee obtained the UPDES Permit on October 1, 1994. Appendix 7-5 shows the application paperwork and approved UPDES Permit.

Surface Water Information

Undisturbed Drainage

The undisturbed drainages originate in the canyons high above the minepad where precipitation in the form of rain or snow supplies the water resources. Four drainages carry surface flows away from the permit area. They are: Lila Canyon Wash (North Fork of Coleman Wash), the South Fork of Coleman Wash, Little Park Wash, and an unnamed drainage between the escarpment and Little Park Wash. Range Creek Canyon lies over the drainage divide to the east. No surface flows from the permit area reach Range Creek.

The Permittee describes the regional surface-water flow pattern of the permit and adjacent area in section 724.200 of the PAP. Plate 7-1 shows the locations of known seeps, springs, and watering ponds. Surface-water resource information should include flow, quality, containment, and transport of overland water.

On page 13 of Chapter 7, the Permittee indicates that there are five drainages within the permit area: Horse Canyon Creek, Little Park Wash, Lila Canyon Wash, Stinky Springs Wash (named by the Permittee), and the Right Fork of Lila Canyon Wash (also named by the Permittee). The Rules designate all but the Right Fork of Lila Canyon Wash as at least intermittent channels. All drainages on the proposed permit eventually flow to the Price River drainage.

The Horse Canyon Creek drainage is adjacent to the proposed permit, however the area of Horse Canyon that lies closest to the proposed permit has already been undermined and would not likely be impacted further by the proposed mine. Much of the area above Lila Canyon Wash has also been undermined.

The Permittee describes Surface Water again in Section 722.200 of the PAP. The Permittee's statement that: "There are no streams, lakes or ponds or irrigation ditches known to exist within the proposed permit or adjacent areas," indicates that the area is dry and void of perennial or intermittent surface flows. A review of the surface water data in Appendix 7-1 substantiates that most channels are dry. Monitoring has not detected flow in the channels near the proposed minesite, or the channel of Little Park Wash in the mountainous region above the mine. However, the Permittee has collected some surface water information on Lila Canyon Wash and Little Park Wash (see Appendix 7-1). The Permittee states that the Lila Canyon drainage is normally dry, flowing only in response to precipitation runoff or snowmelt. Nonetheless, it appears that other sites need to be evaluated to determine what surface water resources exist, and what impacts could occur from mining

The Permittee has not assessed or collected data from Stinky Springs Wash. This drainage is over a square mile in area and therefore designated by the Rules as at least an intermittent stream channel, which the Permittee should monitor monthly during periods of flow. Without data, the Division cannot determine what characteristics this channel exhibits. Recently gathered information has shown there are springs in the lower part of the canyon that wildlife use for watering. These are drought years and it is not known what type of stream flow could occur from these springs, especially without monitoring data.

Disturbed Drainage

Disturbed area drainage can contribute much higher concentrations of sediments downstream than undisturbed area runoff. Disturbed area drainage comes from precipitation falling on unprotected ground, carrying away soils, which then causes sediment loading in downstream channels. The Permittee proposes to control disturbed area drainage by using silt fencing, culverts, ditches, and a sedimentation pond to contain and control sediment on the disturbed area, and to prevent downstream contamination.

The Permittee has not quantified potential discharge from the UPDES sites, especially the mine-water discharge site. If discharges occur in high quantities, a concern of SUWA, downstream impacts to the channel could result. For this review, the Division will consider the UPDES sites as disturbed area drainage, because they are anthropogenic in nature.

The Permittee needs to develop a mine-water discharge model to identify potential impacts from mine water discharges to stream channels and to the nearest perennial stream. The model should assess the flow; water level in the channel; and the amount of mine discharge it would take, either intermittently or continually, to reach the nearest perennial stream or stream

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that contains aquatic life. The Permittee committed, in Section 726, to develop a model prior to mining, to determine potential impacts from mine water discharge to the Price River and fishery.

Baseline Information

Ground-water Information

The Permittee reported fluid levels in a number of boreholes. Drill holes S-26, S-27, S-28, and S-31 were cased in 3-inch PVC pipe with bottom perforations for water monitoring; however, cement seals were faulty, allowing the PVC pipe to fill with cement. Drill hole S-26 was reported dry the week prior to cementing, so the fluid initially reported in some boreholes might have been drilling fluid rather than ground water. Section 722.100 of the PAP refers to reports by Kaiser stating that, with the exception of drill hole S-32, subsurface water was not detected in holes drilled (using air, mist and foam) within 1.25 miles of the cliff face. No apparent increase in fluid level could be attributed to ground water inflow from these holes, some of which were open for two weeks.

Kaiser drilled S-32 in 1981 in SE1/4SW1/4 Sec. 6, T. 17 S., R. 15 E., south of the Lila Canyon Extension, and completed it as a piezometer in the Grassy Member of the Blackhawk Formation. The Permittee has included the drill-log, a Chronology of Development, and Water Pump Tests and Samples in Appendix 6-1 (Section 6.5.1). At least 4 water level measurements and one suite of water-quality analyses were done at S-32. There is no information on the current condition of S-32 in the PAP. The Permittee visited this piezometer and attempted to measure water levels, but found S-32 unusable. The Permittee discusses this in the cover letter for the December 6, 2002 submittal, but did not include the information in the PAP.

IPA-1, IPA-2, and IPA-3 were drilled in 1993 and completed as piezometers in 1994. Water levels were measured from 1994 through 1996, and the Permittee resumed measurements in 2000.

An unsuccessful attempt was made to convert exploratory boreholes S-26, S-28, and S-31, located south of the Williams Draw Fault, to ground-water observation wells or piezometers. Offsetting shallow piezometers were then bored. A-28, the offset to S-28, also was unsuccessful (Table VI-3). A-26 and A-31 were developed to observe ground water in the alluvium of Little Park Wash. Table VI-3 does not indicate that A-26 and A-31 have been plugged and abandoned; however, the Permittee has no data on them (Section 6.5.1, p. 21) and considers them unusable for ground water monitoring (Section 724.100).

Two borings, described as wells, are located in the alluvium of lower Horse Canyon. To the best of the Permittee's knowledge the one identified as the MDC Well has been sealed. The MDC Well is associated with water right 91-185 in Table 7-2. The Permittee plans to use the Horse Canyon Well, nearer the old Horse Canyon Mine surface facilities, as a water supply well during mining and reclamation activities. The PAP contains no information on the water quality

or quantity, or the capacity of the well to serve as a water-supply source. The Permittee briefly describes the condition of this well in the cover letter for the December 6, 2002 submittal (there is a pump on top of a concrete cap that encloses the well), but this additional information has not been included in the PAP. Since Horse Canyon is an intermittent drainage with apparently ephemeral flow, similar to other drainages in the area, water-level and water-quality information from this well could be valuable in characterizing the hydrologic balance, especially that of the alluvial aquifers. The Permittee needs to further investigate the possibility of using this well to monitor quality and quantity of water in the alluvial aquifer in Horse Canyon.

SUWA has raised concerns that the extrapolation of the potentiometric surface ignored faults, the car dump, and the most recent data; and covers an unacceptably large area based on just three closely spaced data points. The Division notes that the potentiometric surface also does not indicate the postulated ground-water divide described in Section 724.100 nor does it extend to the 1993 BXG measurement in the Horse Canyon Mine (which is closely congruent with the surface as drawn). In spite of these limitations, the potentiometric surface and the projected water/coal contact shown on Plate 7-1 give a reasonable approximation of the depth to water in the coal seam, in water-bearing strata above the coal seam, and in potentially impacted strata below the coal seam. This information is sufficient to meet the requirements of the Coal Mining Rules (R645-301-724.100). The Division will evaluate additional information as it receives it.

Statements in Section 724.100 (page 9) that no springs occur in or below the Price River Formation or Castlegate Sandstone are not accurate. Although there may be no large springs below the Price River Formation, the seeps in Stinky Spring Wash issue at the contact of the Blackhawk Formation and Mancos Shale.

Information in Table 5 (Chapter 7) on the strata from which springs flow does not match statements throughout the PAP and does not match the information on Plates 6-1 and 7-4. There is no separately identifiable Flagstaff formation in this area and according to Plates 6-1 and 7-4, L-10-G and L-12-G issue from the North Horn Formation.

Regional Aquifer

SUWA has raised several related concerns regarding ground water:

- That there is a regional aquifer;
- That the regional aquifer is not described,
- That there is no information on the discharge area and discharge rates for the regional aquifer; and
- That UEI has not established that the saturated zone is not an aquifer.

The July 2000 Environmental Assessment (EA) of the Lila Canyon Project prepared by the BLM labels the “coal formation” of the Blackhawk Formation as a regional aquifer. It also

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mentions springs issuing from the Blackhawk at lower elevations within the canyons; however, the 1986 survey of the Horse Canyon area by JBR and the 1993 - 1995 survey of the area around Lila Canyon by EarthFax did not identify any seeps or springs issuing from strata below the upper Price River Formation.

Previously unknown seeps, which flow from the contact of the Blackhawk Formation and Mancos Shale, were discovered in 2000 in an unnamed canyon at the southwest corner of the Lila Canyon Extension area; inside the coal lease boundary but just outside the proposed permit area. The Permittee initiated monitoring of these seeps (L-16-G and L-17-G) in 2002. This intermittent drainage, located east and south of Coleman Wash - mainly in Sections 14, 23, and 26, T. 16 S., R. 14 E., had been identified by Utah DWR as an area where bighorn ewes and lambs congregate, their presence indicating a water supply.

The Permittee surveyed the drainages in the permit area in 2002. Results are in Appendices 7-6 and 7-7.

The coal seams and adjacent strata of the Blackhawk Formation are saturated, at least in the vicinity of the IPA piezometers. The PAP asserts that the Mesa Verde Group (the Price River Formation, Castlegate Sandstone, and Blackhawk Formation) is not an aquifer because:

- The group does not transmit ground water to supply any water sources,
- The water has no potential to be used or developed, and it is not elemental to preserving the hydrologic balance in the permit and adjacent area, and
- There are no observable discharge points in the permit and adjacent areas (Section 724.100).

The Permittee needs to clarify such statements in the PAP because the seeps in Stinky Spring Wash, adjacent to the southwest corner of the Lila Canyon Extension area, issue at the contact of the Blackhawk Formation and Mancos Shale. Although these seeps are not a water supply and have limited use, they appear to be an important source of water for Bighorn sheep, specifically in the early spring. Plate 7-1 indicates that the source for the water flowing from these seeps could be connected to the saturated zone, evident in the IPA piezometers, that will be intercepted by the proposed mine. The Permittee needs to evaluate the hydrogeology of these seeps, whether their source is regional, intermediate, or local in extent, and what impacts the proposed coal mining might have on them.

Lines' model applied to Range Creek

SUWA has raised concerns that the cross-section in Figure 8 in Lines (1985, The ground-water system and possible effects of underground coal mining in the Trail Mountain area, central Utah, USGS Water-Supply Paper 2259) is a model for Range Creek and that it clearly supports discharge to Range Creek from a regional aquifer. The study by Lines provides valuable insight

into ground-water systems in the Wasatch Plateau, specifically to the Trail Mountain area. It is possible to apply much of the information to the Book Cliffs coalfield as well.

However, the situation presented diagrammatically in Lines' cross-section differs from the reality of the hydrogeologic environment at Lila Canyon and Range Creek in at least two important aspects discussed in the PAP:

- 1) Along its entire course, Range Creek has not eroded deeper than the upper Price River Formation, so a thick section of low-permeability rock isolates the creek from the projected saturated zone in the lower Mesa Verde group; and
- 2) Range Creek is approximately 6 miles from the Lila Canyon Extension (Section 724.200): the cross-section in Lines has no scale, but proximity of the stream and saturated coal seam is implied.

In addition, in the reaches nearest Lila Canyon, Range Creek is significantly higher in elevation than the potentiometric surface of the saturated strata, as shown on Plate 7-1B.

Mine Inflow

Except for water that flowed into the Horse Canyon Mine and was used as part of the coal-mining operation, there has been no diversion of this water for beneficial use (water rights were filed on this in-mine water by IPA: water encountered by mining and used underground is not subject to appropriation through water-rights; water encountered by mining that is brought to the surface for beneficial use is subject to appropriation through water rights). The PAP states that the Permittee will probably encounter underground water from the saturated zone and use it during development and operation of the mine in the Lila Canyon Extension. The Permittee will discharge water that they cannot use or store underground to the surface if it meets applicable effluent limitations (742.146).

Information on inflow to the Horse Canyon Mine is sparse. Generally, underground flows from rock slopes and gob areas into the Horse Canyon Mine were small. Only when the mine intercepted the Sunnyside Fault in deeper, down-dip areas was significant water encountered. Prior to suspending operations, the Horse Canyon Mine pumped water from the workings near the Sunnyside Fault to keep them from flooding. They used some of the water for mine operations; the rest was discharged intermittently to the surface in Horse Canyon. According to sources referenced in Chapter 7, the estimated average discharge rate was 0.2 cfs, but there was no estimate of in-mine consumption.

A large section of the Horse Canyon Mine, including the Geneva exploration tunnel and the rotary dump, is below the potentiometric surface shown on Plate 7-1. Because underground exploration work performed by BXG in 1993 found water in the Horse Canyon Mine at approximately 5,870 feet, the PHC (Appendix 7-3, p. 8) includes the assumption that the Geneva exploration tunnel is flooded. The Lila Canyon Extension will eventually intercept that tunnel

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on a limited basis, which will provide a water source for mining. Depending on how much water is there, and how much will be used for mining, the Permittee may then have to pump water from the mine. Because of undulating floor and unknown void areas, it is impossible to determine the amount of water the Permittee would pump (PHC, p. 8).

Plate 7-1 shows several locations where the Horse Canyon Mine monitored in-mine flows for quantity and quality. There are also data from S-32, located to the south of the Lila Canyon Extension area (Appendix 6-1). The PHC discusses this information on water from the saturated zone.

Based on the current Horse Canyon Mine MRP, the Lila Canyon Extension PAP repeats an unclear description of a ground-water divide in the deep-saturated zone between Horse Canyon and Range Creek and extending between Lila and Little Park drainages; Plate 7-1 does not show this divide. If such a divide exists, it indicates water is flowing in different directions in the deep saturated zone. According to the cover letter for the December 6, 2002 submittal, the Permittee bases conjecture as to presence of this divide on earlier work done by EarthFax. Although the existence of such a divide appears speculative and questionable, this mention of it in the PAP is not consequential.

SUWA has raised concerns that UEI has not described seasonal variation in groundwater – especially with maps or cross sections. Plate 7-1 shows water-level elevation contours. The Permittee tabulates seasonal variation in the water levels in Appendix 7-1 and 7-2 for the IPA piezometers, but there are no cross-sections and contour maps showing seasonal differences of head. Although the Division sees little value in doing so, the Permittee needs to portray seasonal variations of head on contour maps or cross-sections to satisfy Coal Mining Rule R645-301-722.100.

Baseline Data Adequacy

SUWA has raised concerns that the PAP contains numerous water samples from the mined area of the Horse Canyon Mine that do not represent pre-mining conditions, that the JBR data are not pre-mining, and that the JBR data provide no baseline for the permit area. The Division considers the JBR data as valid pre-disturbance, pre-mining baseline in relation to the Lila Canyon Extension and as an important part of the required description of the existing, pre-mining hydrologic resources of the permit and adjacent areas. The JBR data alone are not sufficient baseline data, but they are useful and valid baseline data.

SUWA has raised concerns that there are no baseline ground-water monitoring data on the springs the Permittee will monitor, and that IPA data are sporadic – not adequate baseline. The Division considers the data collected in 1993, 1994, and 1995 for the springs and 1994, 1995, and 1996 for the piezometers as valid pre-disturbance, pre-mining baseline in relation to the Lila Canyon Extension and as an important part of the required description of the existing, pre-mining hydrologic resources of the permit and adjacent areas. In addition, the PAP contains

at least one year of current quarterly baseline data from the springs, streams, and piezometers – sufficient for a PAP submittal under the guidelines in the Division's Directive Tech 004.

SUWA has raised concerns that IPA-1 –2, and –3 are the only potential source of information on water quality in the saturated zone. There is information on ground-water quality and quantity in the analyses of in-mine flows at the Horse Canyon Mine. There are also data from S-32, located to the south. The PHC discusses this information on water from the saturated zone.

Because of depth to water and the small diameter of the casing in the IPA piezometers, the Permittee has determined that it would be impossible to obtain valid water-quality samples from these boreholes. The Division does not share the opinion that obtaining valid samples from these boreholes would be impossible. However, considering the cost and other difficulties that would probably be involved under such conditions, the availability of water-quality information from other sources, and the low probability of adverse impacts to this water, water-quality monitoring from these boreholes is not necessary to satisfy the requirements of the Coal Mining Rules.

The Permittee has collected ground water data at some designated locations since July 2000. They included some additional sites in 2001 and 2002. The Permittee has monitored the IPA piezometers since 2000.

The first page of the 1989 Water Monitoring Data in Appendix 7-2 is illegible, and the Permittee needs to provide a legible copy. If a better original version is not available for reproduction, the Permittee should redo the table so the information is usable.

Monitoring - Inside Vs. Outside the Permit Area Boundary

SUWA has raised concerns that fourteen EarthFax data points are within the permit area, but data were collected for only one. During the EarthFax survey in 1993 – 1995, data were collected for all fourteen seeps and springs located inside the permit boundary, which is why their existence is documented in Appendix 7-1. Not every site had flow sufficient to obtain valid water-quality samples: many of the fourteen locations SUWA refers to were no more than wet spots some years, and were dry other years. Where flow was sufficient and consistent, water-quality analyses were done for sites representative of water rights and ground-water discharge zones.

The number of springs monitored on one side or the other of the permit area boundary is not relevant: the permit and adjacent areas are to be monitored, and impacts are to be minimized both inside and outside the permit boundary.

SUWA has raised concerns that five seeps and springs are not sufficient, that four of them are outside the permit, and that one spring in the permit area is not sufficient baseline.

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Determination of the permit area is not based on hydrologic systems. The Coal Mining Rules require protection of resources both within and outside the permit area and baseline and operational monitoring of both the permit area and adjacent areas. The Division notes that expanding the permit area to include more springs would actually lower the performance standard for protection of the added springs from; “minimize impact” and “prevent material damage”, to simply “minimize impact”.

Ground-water Emergence Zones – Groups of Springs and Seeps

SUWA has raised concerns that baseline data need to be collected at all springs and seeps, starting immediately. The Coal Mining Rules require a description of the ground-water hydrologic resources: location; extent; ownership; seasonal quantity and quality; discharge, depth, or usage; and additional information deemed necessary and required by the Division. Baseline data sufficient to make this description are in the PAP. Additional, detailed investigation of every aspect of every component of the hydrologic resources is not needed to describe the resources and minimize impacts, or to comply with the Coal Mining Rules.

Water-quality analyses done by EarthFax were representative of the groups of springs and seeps in the ground-water discharge zones. Springs selected by the Permittee for operational monitoring typically have baseline water-quantity and -quality data from the EarthFax survey, have been developed for use by the water right holder, and have the greatest or most consistent flow of the group. At sites that have been selected for operational monitoring, monitoring was resumed in 2001 to establish a continuous record from pre-mining into operational conditions.

SUWA is asserting additional baseline data are needed for every site, irrespective of use, location, flow, and other existing information about the site and the potential of being impacted. Additional baseline monitoring of every point source would provide, at best, marginal information to further describe or define the hydrologic resources of the Lila Canyon Extension. The EarthFax survey was done during a three-year period during which the Palmer Hydrologic Drought Index (PHDI) for the region around the Lila Canyon Extension went from wet (1993) to drought (1994) and back to wet (1995). The area is currently in the fourth year of a drought, so, particularly at this time, repeating baseline monitoring for all the sites would be unlikely to produce additional, useful information: the springs that will be monitored during mine operations are currently being monitored to provide continuity of data from pre-mining through reclamation.

SUWA has raised concerns that seeps and springs cannot be treated as systems or groups – each source is a separate resource as regards hydrology, wildlife, and vegetation. The survey results from 1993, 1994, and 1995 in Appendix 7-5 document the seasonal, ephemeral nature of individual discharge locations within a ground-water discharge zone or area: discharge appeared at new, previously dry locations and diminished at some older sites during the three years the EarthFax survey was in progress. This is a typical pattern and has been documented throughout the Book Cliffs and Wasatch Plateau coalfields and many other locations. The springs selected

by the Permittee for monitoring have had relatively consistent flow: some have been developed by water-right holders to concentrate flow or maintain more consistent flow.

SUWA has raised concerns that L-6-G is adjacent to the Horse Canyon Mine and is not a useful monitoring point. L-6-G has provided pre-disturbance, pre-mining baseline in relation to the Lila Canyon Extension and contributes to the required description of the existing, pre-mining hydrologic resources for the permit and adjacent areas. Because L-6-G has been frequently dry, L-11-G, located approximately 100 yards upstream of L-6-G and representative of the same ground-water emergence zone, was added to the monitoring plan in 2001, and L-6-G was dropped from the monitoring plan in 2003.

Surface Water Information

SUWA has raised concerns that seasonal variation of Lila and Little Park Wash must be shown, and that remote samplers and crest-stage gauges should be used to monitor the intermittent channels.

Channels that drain more than one square mile but have ephemeral flow are included in the intermittent stream definition because the potential flood volumes necessitate application of the stream-channel diversion criteria of the Coal Mining Rules. Classification is to be made at the time of permit application, based on collected data and probable conditions, which helps eliminate skewing by data from unusually wet or dry periods (Preamble to the Federal Rules).

Horse Canyon is an intermittent drainage. Little Park Wash, Lila Canyon, and several other channels in the Horse - Lila Canyon area are intermittent by definition under the Coal Mining Rules because, even though flow is sporadic and typically flashy and characteristically ephemeral, they drain an area greater than one square-mile. No facilities are planned for these intermittent drainages, and there will be no diversions. The sedimentation pond is to be built in an ephemeral drainage.

Kaiser installed crest-stage gauges CSG-1, CSG-2, and CSG-3 in Little Park (Page 14, Chapter 6) because mine facilities were to be built in or near the channel and information on flow was critical. Appendix 7-2 contains reports on CSG-1, CSG-2, and CSG-3 from 3rd and 4th quarter 1981. Using remote samplers and crest-stage gauges in the Lila Canyon Extension area would not provide information relevant to meeting the requirements of the Coal Mining Rules, preventing off-site impacts, facilitating reclamation, or otherwise protecting the hydrologic balance and environment.

Baseline Cumulative Impact Area Information

The Permittee has evaluated hydrologic impacts east of the permit area to Range Creek. The overlying strata above the planned mining zone is well over 1000 feet in the eastern half of the permit, and in most eastern areas of the permit the overlying strata above the coal seam is

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near 2000 feet thick. Do to the extensive thickness, it is likely that no subsidence impacts will occur in those areas. The Permittee explains that there are two zones where groundwater occurs. The upper zone is in the Wasatch Group associated with the base of the Colton Formation. The Flagstaff Limestone and North Horn Formation.

SUWA has expressed concerns that discharges from UPDES sites will pick up salts from the channel and carry them down to the Price River in conflict with the Colorado River Basin Salinity Control Program. The PHC states that all mine water discharge will meet UPDES discharge standards. The Permittee proposes to meet those standards by controlling and containing disturbed area runoff and any mine water that may have to be discharged. If the quality parameters of the discharge water do not meet UPDES discharge standards, the Permittee proposes to hold/settle the water or chemically treat any water before discharging it to meet UPDES standards. Although the Permittee intends to meet water quality standards, the fact that discharged water is anthropogenic and has the capability of affecting the stream channel and potentially influence the water quality of a perennial fishery, the Price River, the Permittee needs to evaluate the probable downstream effects, on both quality and quantity, to the receiving channels and streams. The Permittee commits to evaluating the parameters and erosion impacts if water should be discharged, see PHC Appendix 7-3.

The Permittee needs to evaluate the impacts of mine water discharges **before** mining, if the operator waits to conduct studies after water is discharged, impacts could be realized before studies can be completed.

SUWA has expressed concerns that subsidence will impact stream channels above the mine and surface flows will be interrupted. The Permittee points out in the PHC that subsidence should not cause such impacts. The regulations require buffer zones be established 100 feet (horizontal) from perennial and intermittent stream channels.

SUWA has raised concerns that there are insufficient data to prepare the CHIA. Information needed to meet the regulatory requirements of R645-301-725 is available from federal, state, and a number of sources. The Permittee is not required to provide data specifically for the CHIA determination unless none is available from other sources. The Division is not limited to information in the PAP in preparing the CHIA; however, the Division anticipates that data in the PAP will be used along with other information in preparation of the CHIA.

Modeling

The Permittee calculated runoff flows for some disturbed area drainage areas using Storm Version 6.20, a program based on the SCS-TR55 Method for Type II storms. In Section 726 of the PAP, the Permittee proposes to model the potential impacts from mine water discharge before mining. It is the position of the Division to obtain a complete mine plan **before** issuing a permit. The Permittee's commitment does not provide the public with sufficient information to analyze probable offsite impacts from various amounts of mine water discharge (water quality

changes and erosion). The Division previously requested that the Permittee model flows at various discharge volumes from 0 to 500 gpm. The Division still requires this information.

Alternative Water Source Information

The Permittee states that they conducted a water rights search for a mile outside the proposed permit area. Plate 7-3 shows the locations of those water rights and Table 7-2 has a description of each right. The Permittee indicates that UEI own the rights to approximately 1.5 cfs in the area and if any adverse effects on water resources from the mining operation result in a loss of water sources, UEI would replace from their rights.

The specifics of transferring water shares is easier to understand than moving water from one location to the other, especially if the water losses occur in a different area and elevations than the water supply. The Permittee should expand on this concept as well as obtain the information to determine a reasonable probability of impacts to water resources.

Probable Hydrologic Consequences Determination

Section R645-301-728 of the Coal Mining Rules requires that the PAP contain specific findings. Section 728 of the PAP refers to Appendix 7-3 for many of the findings. Potential adverse impacts identified in the PHC are:

- Increased sediment loading,
- Diminution or interruption of water supplies on water rights,
- Discharge of contaminated ground water by pumping,
- Erosion and streamflow alteration, and
- Deterioration of water quality (see Section 728.310).

The Permittee used information from the Columbia and Horse Canyon Mines along with baseline data collected for the Lila Canyon Extension.

The Rules relating to the PHC and the relevant sections of the PAP are discussed below.

728.300. The PHC determination will include findings on:

728.310. Whether adverse impacts may occur to the hydrologic balance;

SUWA expressed concerns that relate to the determination of the PHC, including that there are inadequate baseline data to prepare the PHC and that the Permittee has not addressed potential adverse impacts to a regional aquifer and Range Creek in the PHC.

Climatological information on average seasonal precipitation, average direction and velocity of winds, and seasonal temperature ranges that is representative of the permit and adjacent areas is presented in the PAP. Overall, information on geology and hydrology is

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adequate to prepare the PHC. Maps and cross-sections that include the Range Creek drainage have been added to the PAP, and a discussion of the Range Creek drainage has been added to the PAP (Section 724.200) and Appendix 7-3 (p. 6-7) to help clarify for the public why regional impacts, particularly adverse impacts to Range Creek drainage, are not expected.

728.320. Whether acid-forming or toxic-forming materials are present that could result in the contamination of surface- or ground-water supplies;

As mining proceeds, materials overlying and underlying the coal seam can be exposed to water and oxygen, both underground and at the surface. There is some potential for generation of acid or toxic drainage; however, rocks of the Mesaverde Group are carbonaceous and persistence of acids and related toxins is unlikely. The Permittee has designed the refuse pile to handle potentially acid- or toxic-forming materials brought to the surface and to minimize the formation of acid- and toxic-forming drainage. Based on the hydrology, geology, and climate of the area and the design of the refuse pile, acid or toxic impacts from materials removed from the mine (or from mine water discharge) are unlikely (PHC, p. 14).

728.330. What impact the proposed coal mining and reclamation operation will have on:
728.331. Sediment yield from the disturbed area;

Sediment controls and a sediment pond will be constructed at the new mine site to minimize impacts, as indicated in the Sediment Control Plan, Appendix 7-4. The Permittee will construct drainage ditches and sediment control structures according to methodologies and specifications in Appendix 7-4. The Permittee will undertake all construction and upgrading activities during periods of dry weather, commencing in late spring and lasting through fall. For both the mining and reclamation periods, it is expected that construction, upgrading, or regrading activities would cause an increase in sediment load to the stream. The Permittee will use temporary sediment controls whenever possible to lessen the impact of construction activities (PHC, p. 12).

728.332. Acidity, total suspended and dissolved solids and other important water quality parameters of local impact;

Hydrologic resources that might be impacted at the Lila Canyon Extension are identified. The springs and stream channels that the Permittee is monitoring in the Lila Canyon Extension area are discussed in the PHC.

The Permittee identifies water rights in Section 645-301-727 and Table 7-2. Contrary to the statement in Section 727, although UtahAmerican Energy does claim the largest volume of water, it does not hold the majority of water rights in the Horse Canyon – Lila Canyon Extension area. The BLM holds the majority of water rights in the area, and the State of Utah and ranchers claim as many water rights, or more, than UtahAmerican. Most of the water claimed by UtahAmerican is either from Horse Canyon Creek or underground water from the Horse Canyon

Mine. Therefore, it is not readily available for replacement of other water supplies in the area, which are mostly springs along Patmos Ridge. Plate 7-3 does not show water rights 91-4959 (Redden Spring), 91-183 (Horse Canyon Creek), and 91-185 (MDC well), all held by UtahAmerican Energy.

Surface waters flow only during a limited part of year, and these waters will be protected by sedimentation ponds and other control structures. Data from the Horse Canyon Mine indicate the main effect of the mine discharge on water quality in the receiving Horse Canyon channel was a decrease in TSS and an increase in TDS (PHC, p. 4).

The major usable water resources that mining could potentially affected in the area are springs used by wildlife and livestock. Most of these springs are located upstream of the permit area, or are in areas where subsidence resulting from post-1977 mining is not documented nor expected from operations in the Lila Canyon Extension. The PHC states that although pre-mining data are not available for the Horse Canyon Mine, based on available data (Appendices 7-1 and 7-2), there has been no depletion of quantity or quality of surveyed springs in the Horse Canyon permit area, and none is expected in the Lila Canyon area (PHC, p. 14).

728.333. Flooding or streamflow alteration;

There is no PHC determination of what impact the proposed operation will have on flooding and streamflow alteration. The Coal Mining Rules require this determination to be in the permit application, provided **before** the permit is issued.

Based on reasonable estimates of mine-water discharge, the Permittee needs to evaluate the capacity of the existing channel to determine if flooding will be a probable hydrologic consequence of discharging to this channel.

SUWA has raised concerns that there is no baseline characterization of the receiving channel for mine water discharge against which to compare the impacts of discharging to this channel. The PAP contains a commitment to evaluate the channel before discharging water (Section 728.333) and to take additional steps to evaluate the before- and after-pumping stream morphology below Lila Canyon Extension, which will allow the Permittee to make any necessary changes to reduce or eliminate negative impacts; however, this does not meet the requirements of R645-301-728.333.

The PHC states that the Permittee expects the downstream impacts of pumping water from the mine to be very similar to those experienced in the adjacent Horse Canyon Mine. The PHC notes that "before pumping" stream characteristics for Horse Canyon are not available: the primary basis for determining that there have been no "known impacts" to the channel from the Horse Canyon Mine is a lack of documented negative impacts.

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Even though there are no pre-pumping data on Horse Canyon Creek, there are similar channels flowing from the Book Cliffs escarpment that would probably provide a reasonable model of what Horse Canyon Creek was like before pumping - most notably, for the purposes of the Lila Canyon Extension, the two forks of Lila Wash that border the disturbed area. A comparison between such undisturbed channels and Horse Canyon Wash could help determine the nature and extent of probable impacts from discharging mine water into Lila Wash.

728.334. Ground-water and surface-water availability;

Contamination, diminution, or interruption of water resources would not likely occur within the mine permit area. Surface waters flow only a limited part of year and will be provided protection by use of sediment controls. The major water resources that mining could potentially affect are the springs that wildlife and livestock currently use. Most of these springs are located upstream of the permit area, or are in areas where subsidence resulting from post-1977 mining is not documented or expected. No known depletion of flow and quality of surveyed springs exists in the Horse Canyon permit area, and none is expected in the Lila Canyon area. It is unlikely any alternative water supplies will be needed, although they have been identified in Section R645-301-727 (PHC, p.14).

The PHC discusses the springs and stream channels the Permittee is monitoring in the Lila Canyon Extension area and the Permittee has evaluated current data in determining the PHC. Water monitoring data for the Horse Canyon Mine - Lila Canyon Extension are in Appendices 7-1 and 7-2 of this application and Appendix VII-1 of the Horse Canyon MRP.

Perched ground water systems in the Colton and undifferentiated Flagstaff - North Horn Formations are unlikely to be affected because of the thick section of low-permeability rock, rich in plastic clays that can seal fractures, that lies between them and the coal seam. These perched zones are not extensive or interconnected, so if a fracture does drain one, there will be little or no impact on adjacent zones (PHC, p. 12). These perched zones are also typically outside the areas most likely to be subsided.

L-16-G and L-17-G, in Stinky Spring Canyon, issue from the Mancos Shale or lowermost Blackhawk Formation. They are outside the permit area, outside the limit of subsidence, separated from the proposed mine workings by a fault, and lie several hundred feet below the coal seam. There is no potential for Lila Canyon Extension to negatively impact these springs or their recharge sources (PHC, p. 14). At an elevation of approximately 6,000 feet, they are above the water levels measured in the IPA piezometers and roughly at-grade with the projected potentiometric surface on Plates 7-1 and 7-1B.

Although the drainages might be intermittent under the definitions in the Coal Mining Rules, flows in the channels of Lila Canyon Wash, Little Park Wash, Right Fork of Lila Canyon, and Stinky Spring Wash have been determined to be ephemeral. The Permittee has monitored streams in the Lila Canyon Extension since December 2000 and there has been no flow

observed, except in response to precipitation runoff or snow melt. There are no field data or laboratory reports for water quality and quantity for these runoff and snowmelt events. These data need to be added to the PAP and used in determining the PHC.

Data from the right fork of Horse Canyon during the period when the mine was discharging to the stream indicate a large difference in flow rates between HC-1 and B-1, respectively representative of the upper and lower reaches of Horse Canyon Creek. Chemical analyses show no significant differences between HC-1 and B-1 during this period with two exceptions: First, TSS is noticeably less in the lower stream, which the PHC attributes to probable prior deposition of suspended load (but which may be simply dilution of the sediment load in the natural flow by low-sediment mine discharge). Secondly, average TDS is higher downstream because mine water that was discharged to Horse Canyon had been in contact with saline marine shales in the Blackhawk Formation (PHC, p. 4).

Range Creek is the perennial stream closest to the Horse Canyon Mine – Lila Canyon Extension. Subsidence is projected to remain within the permit boundary, making it improbable that subsidence would affect any part of the Range Creek drainage. Due to the distance of several miles between the proposed permit area and Range Creek, and the roughly 1,000-feet of low permeability strata between the coal seam and Range Creek, Lila Canyon extension does not present any Probable Hydrologic Consequences to Range Creek (PHC, p. 7).

728.335. Other characteristics as required by the Division;

SUWA has raised concerns that the impacts of increased salinity from the solution of salts from the Mancos Shale are not evaluated: this concern is also addressed in other sections of this TA and is not further discussed here.

728.340. NA

728.350. Whether the UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES conducted after October 24, 1992 may result in contamination, diminution or interruption of State-appropriated Water in existence within the proposed permit or adjacent areas at the time the application is submitted.

Table 7-2 identifies state appropriated water in, and adjacent to, the proposed permit area. Some of the appropriated water is within the old workings of the Horse Canyon Mine, other water flows from springs in Horse Canyon and Little Park Wash, particularly along Patmos Ridge. There are also water rights on surface water in Horse Canyon and Little Park Wash.

The PHC states that it is unlikely contamination, diminution, or interruption of any water resources will occur within the permit area (p. 14). The PHC needs to contain an explicit determination regarding contamination, diminution, or interruption of State-appropriated Water; not only for the permit area, but also for the adjacent area. Somewhere in the PAP, preferably in

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the PHC itself, the basis on which the Permittee bases this determination needs to be clearly presented. If there is a possibility of contamination, diminution, or interruption of State-appropriated Water in the permit or adjacent areas, a water replacement plan under R645-301-525.400 and –525.480 is needed.

The PHC does not completely contain descriptive information that characterizes the types of surface water resources and potential impacts. The Permittee needs to update the PHC with descriptive information to describe probable impacts to hydrologic resources from subsidence.

Findings:

R645-301-721, (1) The Permittee shall submit a surface monitoring plan to survey all streams and channels in, and adjacent to, the permit area. The Permittee shall identify and describe all water resources within the drainage basins and potential impacts to the resource and downstream users. The Permittee will collect and evaluate quantitative and qualitative data for all surface water sources. The survey will establish baseline information and trends for each monitoring site. From the data, the Permittee will characterize the surface waters in, or adjacent to, the permit area as perennial, intermittent, or ephemeral. The Permittee can provide survey information to characterize surface waters if weather conditions and access prevent the collection of reliable monitoring data **(2)** The Permittee shall provide specific stream characterization information in a table and illustrate the reaches on a map. The table shall identify the length of the reaches classified and other quantitative and qualitative information defining the reach. The Permittee can base classification on water table elevations (with respect to channel surface) and biologic (plant and aquatic) communities present. The Permittee will classify stream reaches or segments according to the type (perennial, intermittent or ephemeral) established in the definitions under R645-301-100 **(3)** The Permittee should make descriptive adjustments based on the life of the mine to describe unusual wet or dry periods that may confound average rainfall and runoff conditions. The Permittee will conduct representative monthly sampling for all perennial sources and monitor for parameters as per Table 7-4, as committed to in the application, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee will conduct monthly sampling during periods of flow for intermittent streams and monitor for water quality as committed to in the application, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines. The Permittee will conduct quarterly surveys for ephemeral streams and monitor for water quality as committed to in the application, Section 731.220, Volume 6, and in accordance with the DOGM Water Monitoring Guidelines.

R645-301-721, The Permittee shall conduct surveys of streams and channels and describe methods to mitigate potential mining impacts from discharges and subsidence. The Permittee must submit the surveys and mitigation plan before the Division will issue a mining permit. The survey will describe water use, water rights, channel morphology, and likely impacts. The Permittee will describe impacts to channels or perennial streams, or identify the extent (point) where impacts are no longer realized. For mine discharge sites, the Permittee shall model impacts based on flow from 0 to 500 gpm. For channels above mine areas, the Permittee shall identify the probable impacts if subsidence should intercept stream or spring flow, specifically to water rights and downstream uses. The Permittee will describe access and feasibility of mitigation of subsidence impacts to perennial, intermittent, or ephemeral stream channels and how channel restoration could be accomplished.

R645-301-728, (1)The Permittee needs to make specific findings for the PHC, which identify potential impacts to all surface water sources. The Permittee shall characterize the channels and flow patterns within each drainage-backed by data, describe all water uses associated with those basins, potential impacts to those uses and describe the total hydrologic impacts to surface water resources on and adjacent to the permit area based on sampling, monitoring, characterization and studies. The Permittee shall use this information to summarize the potential for mitigation and hydrologic impacts on and off the permit area in the PHC. The PHC shall describe all probable hydrologic consequences from subsidence, discharges to stream channels, impacts to channels, sediment loading, salt loading and impacts to aquatic wildlife **(2)** The Permittee shall discuss what impacts will take place from increased salinity to the Colorado River by discharging water from the mine, and especially how salts dissolved from the Mancos Shale by mine-discharge water might impact the salinity of the Colorado River.

R645-301-722, The Permittee shall show water rights 91-4959 (Redden Spring), 91-183 (Horse Canyon Creek), and 91-185 (MDC well), all held by UtahAmerican Energy, on Plate 7-3.

R645-301-722.100, The Permittee needs to portray seasonal variations of head on contour maps or cross-sections.

R645-301-121.200, -724.300, Information in Table 5 (Chapter 7) on the strata from which springs flow does not match statements throughout the PAP and does not match the information on Plates 6-1 and 7-4: there is no separately identifiable Flagstaff formation in this area, and according to Plates 6-1 and 7-4, L-10-G and L-12-G issue from the North Horn Formation.

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R645-301-724.200, -728.344, Streams in the Lila Canyon Extension have been monitored since December 2000 and there has been no flow observed except in response to precipitation runoff or snow melt. There are no field data or laboratory reports in the PAP for water quality and quantity for these runoff and snowmelt events. These data need to be added to the PAP and used in determining the PHC.

R645-301-728.350. The PHC states that it is unlikely contamination, diminution, or interruption of any water resources will occur within the permit area (p. 14). The PHC needs to contain an explicit determination regarding contamination, diminution, or interruption of State-appropriated Water; not only for the permit area, but also for the adjacent area. Somewhere in the PAP, preferably in the PHC itself, the Permittee needs to clearly present the basis for this determination. If there is a possibility of contamination, diminution, or interruption of State-appropriated Water in the permit or adjacent areas, a water replacement plan under R645-301-525.400 and -525.480 is needed.

R645-301-724.100, At least four water level measurements and one suite of water-quality analyses were done at S-32, but there is no information on the current condition of S-32 in the PAP. The Permittee visited this piezometer, attempted to measure water levels, but found S-32 unusable; this is discussed in the cover letter for the December 6, 2002 submittal, but this information has not been included in the PAP.

R645-301-121.200, The first page of the 1989 Water Monitoring Data in Appendix 7-2 is illegible, and the Permittee needs to provide a legible copy. If a better original version is not available for reproduction, the Permittee should redo the table so the information is usable.

R645-301-121.200, The Permittee needs to clarify statements in Section 724.100 (page 9) that no springs occur in or below the Price River Formation or Castlegate Sandstone are not accurate; although there may be no large springs below the Price River Formation, the seeps in Stinky Spring Wash issue at the contact of the Blackhawk Formation and Mancos Shale.

R645-301-722.100, -624.100, (1) The PAP asserts that the Mesa Verde Group (the Price River Formation, Castlegate Sandstone, and Blackhawk Formation) is not an aquifer because: The group does not transmit ground water to supply any water sources; The water has no potential to be used or developed, and it is not elemental to preserving the hydrologic balance in the permit and adjacent area, and; that there are no observable discharge points in the permit and adjacent areas (Section 724.100) **(2)** The Permittee needs to clarify such statements in the PAP on or adjacent to the permit area because the seeps in Stinky Spring Wash,

adjacent to the southwest corner of the Lila Canyon Extension area, issue at the contact of the Blackhawk Formation and Mancos Shale. Although these seeps are not a water supply and have limited use, they appear to be an important source of water for Bighorn sheep, specifically in the early spring. Plate 7-1 indicates the source for the water flowing from these seeps could be connected to the saturated zone, evident in the IPA piezometers, that will be intercepted by the proposed mine. The Permittee needs to evaluate the hydrogeology of these seeps, whether their source is regional, intermediate, or local in extent, and what impacts the proposed coal mining might have on them.

R645-301-130, In Section 724.100 (p.11), “(personnel communication, 1990)” is given as a reference, but the individual is not identified. Is this a direct quote from the Horse Canyon Mine plan? The Permittee needs to provide the name of the individual who provided this information.

R645-301-728.333, There is no PHC determination of what impact the proposed operation will have on flooding and streamflow alteration. The Coal Mining Rules require this determination to be in the permit application, that is, the Permittee must provide this information **before** the permit is issued.

R645-301-727, Plate 7-3 does not show water rights 91-4959, 91-183, and 91-185, held by UtahAmerican Energy. Contrary to the statement in Section 727, UtahAmerican Energy does not hold the majority of water rights in the Horse Canyon Mine – Lila Canyon Extension area.

MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

Analysis:

Affected Area Boundary Maps

The Permittee submits hydrologic resource information on maps in Chapter 7 that illustrate locations of surface water sources and their flow routes. Plates 7-1, 7-3 and 7-4 show the mine permit and adjacent areas. They are scaled at 1 inch = 2000 feet. The Permittee states that they have identified all surface water bodies on Plate 7-1. The Permittee has identified all drainages by name (for this report).

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The Permittee will identify all perennial, intermittent, and ephemeral stream sections in the channels on the permit and adjacent areas. The Permittee proposes to mine within 100 feet of an intermittent stream channel (Little Park Wash and the unknown drainage between the escarpment and Little Park Wash). The Permittee will provide a map showing where mining will occur within 100 feet (horizontal) of a perennial or intermittent stream channel and any methods to mitigate impacts to those sources.

The affected area map must include “all areas proposed to be affected over the estimated total life of the coal mining and reclamation operations, with a description of size, sequence, and timing of the mining of subareas for which it is anticipated that additional permits will be sought.” In section 521.141 of the PAP, the Permittee states the following:

“Boundaries of all areas proposed to be affected over the life of the permit are shown on Plate 5-1 and Plate 5-2 as well as others. At this time no additional subareas requiring additional permits is not anticipated at this time.”

The Permittee states that they do not anticipate permitting additional subareas for the life of the permit. The permit life is only five years. On Plate 5-5, the Permittee shows that mining in the Lila Canyon area will continue for at least fourteen years. To avoid confusion, the Permittee must show the location of all subareas for which they may seek additional permits. Note that the Permit Section of this TA also discusses this issue. One reason for identifying such subareas is to help the Division make a determination about maximum economic coal recovery. In the past, the Permittee has identified areas to the south as future expansion areas. The Division needs to know the life-of-mine plan for the Lila Canyon area, including expansion areas they plan to permit in the future.

Coal Resource and Geologic Information Maps

Depth to the Sunnyside Seam, the seam to be mined, is shown on the Cover and Structure Map on Plate 6-4. Thickness of the Sunnyside Seam is shown on the Coal Thickness Isopach map on Plate 6-3. Thickness and nature of the Sunnyside Seam, of coal or rider seams above the Sunnyside Seam, and of the stratum immediately below the Sunnyside Seam are shown on the Coal Sections on Plate 6-5. The cross section on Figure 7-1 shows the rock tunnels, the dip of the strata, stratigraphy, and expected ground-water elevation.

Figures VI-1 and VI-2 portray the general stratigraphy of the permit and adjacent areas. Plate 6-1 shows surface geology, including coal crop lines, and the strike and dip of the Sunnyside Seam within the proposed permit area.

Elevation contours on the Sunnyside Seam as determined from the outcrop and bore holes are on Plates 6-2, 6-3, and 6-4. The plates indicate that the coal seam crops out at approximately 6,500 feet in the vicinity of the rock-slope tunnels. The tunnels will intercept the coal seam at approximately 6,300 feet (Appendix 8-2 - Figure 7-1).

Depth of cover ranges from approximately 500 feet near the escarpment to 2,300 feet (Section 525.120 and Plate 5-5). Overburden is, for the most part, around 1,500 feet. Because of the flat topography of Little Park Wash, the deeper coal is generally to the east and north (Section 6.3.)

Fault locations and offsets are shown on Plate 6-1 and discussed in the text. Fault traces are not always visible at the surface, and fault locations on Plates 6-1 and 6-2 are also based on exposures at the outcrop and information from drilling (Geology, Page 24). Interpretations of fault alignments, which are based on detailed mapping by Kaiser Corporation consultants, differ slightly from those on maps published by the others, notably the USGS (Geology, Page 10). Aside from differences in detail, these different sources generally agree on location, extent, and magnitude of the faults.

The Sunnyside Fault, shown on Plates 6-1 and 6-2 of the Lila Canyon PAP and Plate II-2 of the current MRP, limited mining to the east in the Horse Canyon Mine but is not expected to extend into the Lila Canyon area, so is not expected to limit coal recovery at the Lila Canyon Extension.

Many maps and cross sections in the PAP extend as far as Patmos Ridge but include only a small portion of the Range Creek drainage. Geologic maps and cross sections that extend from the Book Cliffs to the Range Creek drainage have been added to the PAP.

Existing Structures and Facilities Maps

There are two pre-existing structures on the Lila Canyon Extension area, a 24 inch culvert and another 48 inch culvert. The 24 inch culvert directs flows from the proposed surface area under the county road and the 48 inch culvert lies in the Right Fork of Lila Canyon Wash. The Permittee shows plans to extend this culvert, then construct a sedimentation pond over the culvert, Plate 7-6.

Information dealing with the location of existing structures is found in section 521.120 of the PAP and its subsections (521.121-521.125). The information is inadequate, unclear, and contradictory.

R645-301-521.121 requires that the Permittee show the location of all buildings in, and within 1,000 feet of, the proposed permit area. The Permittee states, in section 521.121 of the PAP, that the location and current use of all buildings in, and within 1,000 feet of, the proposed permit area for part "B" is shown on Plate 5-2. This is confusing since Plate 5-2 only shows the disturbed area boundaries and does not extend 1,000 feet outside the permit area. In addition, there are no existing buildings in the area and the information in the text implies that there are buildings in the area. If no buildings exist then the Permittee must clearly state that information.

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R645-301-521.123 requires that the Permittee show the location of all public roads in, or within 100 feet of, the proposed permit area. In section 521.123 of the PAP, the Permittee states that the proposed county road is shown on Plate 5-2. R645-301-521.123 deals with existing not proposed public roads. In addition to County Road 126, which is located in or near the disturbed area, there are other public roads within the permit area such as Little Park Road. These must be shown on the map and mentioned in the text.

R645-301-521.124 requires that the Permittee show the location of spoil, waste, coal development waste, and noncoal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the proposed permit area. In section 521.124 of the PAP, the Permittee states that no such items exist within the proposed permit area.

R645-301-521.125 requires that the Permittee show the location of each sediment pond, permanent water impoundment, coal processing waste bank, and coal processing waste bank dam and embankment. In section 521.125 of the PAP, the Permittee states that Plate 5-2 shows the location of the proposed sediment pond and that coal processing waste banks and dams are not anticipated. Again, R645-301-521.125 deals with existing structures not proposed.

The purpose of the existing structures and facilities maps is to show the conditions that exist before the permit was issued. If certain structures and facilities listed in R645-301-521.120 and its subsections do not occur in or around the permit area, then the Permittee must clearly say so in the text of the PAP. If the structures do exist then the Permittee must clearly state so in the text. The Permittee must show the location of existing structures on maps that deal with premining conditions rather than operational.

Existing Surface Configuration Maps

Plate 5-1A shows the existing surface configuration for the Lila Canyon disturbed area. The map is at a scale of 1-inch equals 100 feet and the contour lines are on 25-foot intervals. The contour lines extend more than 100 feet beyond the disturbed area boundaries.

Several drawings, including Figure 1 (Appendix 5-7) and the 5-7A series show existing cross-sections and profiles. Those cross-sections and profiles show 5-foot evaluation intervals. The Division needs access to the most detailed information about the existing surface configuration at the disturbed site. Because the Permittee has access to 5-foot contour intervals, they must update the contour maps with the more detailed information.

In Section 521.141 of the PAP, the Permittee only refers to the life of the permit, which is 5 years, not the life of the mine for defining the permit boundary.

Plate 5-3, Subsidence Control Map, shows the existing topography of the Lila Canyon Extension. The contour lines appear to be taken off a USGS topographic map. The Division considers the contours on Plate 5-3 adequate to show the premining topography in the Lila Canyon Extension.

Mine Workings Maps

Plate 5-1, Previously Mined Areas, shows the location of the known mine workings in the Horse Canyon permit area. . The old mine workings include the Horse Canyon project and the old Book Cliffs Mine. The Permittee shows the approximate dates when each of the subareas of the Horse Canyon Mine and adjacent areas were worked. The area had mining activities from the 1940s to the 1980s. A registered professional engineer prepared and certified Plate 5-1. . See Plate II-2 in the Horse Canyon section of the mine plan for a detailed mine map of the Horse Canyon project.

Doelling lists additional coal mines and mining activity in the area. They include the Calkins prospect, the Lila Canyon prospect, and the Prentiss prospect. In addition to the Book Cliffs Mine other smaller mines were reported by Doelling such as: Prentiss, Utah Blue Diamond, Blue Diamond and Heiner Mine. Some of those mines either were in the same location as the Book Cliff Mine, or were incorporated into it.

On Plate 5-1 the Permittee shows the location of exploration entries in permit area "B," Lila Canyon. However, the legend does not contain the line type showing the exploration entries.

Jay Marshall, who is a registered profession engineer in the State of Utah, certified plate 5-1.

Monitoring and Sampling Location Maps

Plate 7-1 identifies the surface water monitoring sites associated with the original Horse Canyon Mine It also identifies the inventories spring sites on and adjacent the permit area.

Plates 6-2, 6-3, and 6-4 show elevations and locations of test borings. Tables VI-1 and VI-3 contain elevations of core samples. Plates 7-1 and 7-4 show piezometers IPA-1, IPA-2, and IPA-3. Plate 7-1 also shows elevations and locations of seeps and springs monitored in 1989 by JBR and in 1993-1995 by EarthFax.

Horse Canyon Mine UPDES discharge points UT022926 - 001, - 002, and - 003 (monitored from 1979 to 1991) are on Plates 7-1 and 7-4. Plates 7-1 and 7-4 also show currently monitored UPDES discharge points, UT040013- 001A and - 002A. Proposed UPDES points L-4-S and L-5-G are on Plate 7-4.

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Locations for surface-water monitoring points HCSW-1 (HSW-1, HC-1), HCSW-2, HCSW-3, B-1 (HC-2), and RF-1 are on Plate 7-1. Locations for baseline and operational water-monitoring sites added for the Lila Canyon Extension are on Plate 7-4.

Permit Area Boundary Maps

Several plates depict the permit area boundary. The Permittee has submitted Plate 7-1A, Geology Map, showing all drainages from the permit area to the first perennial streams outside the permit area. The map identifies the drainages of the permit area to the Price River on the south. The map also shows the drainages of the permit area and how they relate to the drainages of Range Creek.

The Permittee states in Section 112.600 of the PAP and on Plate 1-1 that Plate 1-1 is the official permit boundary map and that the Division should refer to it to clarify any questions about the permit boundaries. It shows the permit boundaries as Permit Area A- the Horse Canyon project, and Permit Area B- the Lila Canyon Extension.

Plate 1-1 is helpful in identifying the entire permit area. However, the Division is interested in knowing the permit boundary in relationship with the disturbed area boundary. To aid the Division, the Permittee must show the permit boundary as well as the disturbed area boundary on Plate 2-1. In addition, the Permittee must state in the text and on Plate 2-1, or a map of the Permittee's choosing, that that Plate 2-1 or an equivalent map is the official disturbed area map.

Subsurface Water Resource Maps

Many maps and cross sections in the PAP include only a small portion of the Range Creek drainage. The Permittee has added geologic maps and cross sections that extend from the Book Cliffs to the Range Creek drainage to the Lila Canyon Extension PAP. *The Permittee needs to extend maps showing water rights at least as far as the channel of Range Creek.*

Water-level elevation contours are on Plate 7-1. Seasonal variation in the water levels is tabulated in Appendix 7-1 and 7-2 for the IPA piezometers, but there are no cross sections and contour maps showing seasonal differences of head. The Permittee needs to portray seasonal variations of head on maps or cross-sections.

The MDC Well in NW Section 9 of T. 16 S., R. 14 E., near the road junction, is listed in Table 7-2 - Water Rights. The Horse Canyon Well is located nearer the Horse Canyon Mine surface facilities (Section 722.400). These wells were installed for observation of ground water in the alluvium in Horse Canyon and therefore may have been merely piezometers. They are discussed in Sections 6.5.1 and 724.200 and shown on Plate 7-1.

The ground-water elevation in the Horse Canyon Mine, at the rotary car dump at the intersection of the Main slope and 3rd level, is described in Section 724.100 (page 11); it was approximately 5,800 feet in 1986 and the PAP states that it probably has remained at this level since operations ceased in the Horse Canyon Mine. This projected ground-water elevation was used in projecting where mining will intercept water, but not in mapping the approximate piezometric surface on Plate 7-1. The location of the dump is described in the text and is shown on Plate 7-1. Underground exploration work performed by BXG in 1993 found water in the Horse Canyon Mine at approximately 5,870 feet (Appendix 7-2, p. 8). A location for the measurement is on Plate 7-1. The potentiometric surface on Plate 7-1 is closely congruent to the 1993 BXG measurement in the Horse Canyon Mine, although this point does not appear to have been used projecting this surface.

Water rights are listed in Table 7-2. The list includes Redden Spring, plus springs identified as Mont, Leslie, Cottonwood, Williams, Kenna, and two Pine springs (Kenna Spring is in the Range Creek drainage.) In addition, there are eleven unnamed springs listed, plus the MDC well and three rights associated with underground tunnels of the Horse Canyon Mine. Locations are on Plate 7-3. Water rights 91-4959 (Redden Spring) and 91-185 (MDC well), both held by UtahAmerican Energy, are not shown on Plate 7-3.

Surface and Subsurface Manmade Features Maps

Section 521.120 of the PAP deals with the location of existing structures on maps. The information in that section and the following subsections is inadequate, unclear, and contradictory.

R645-301-521.122 requires that the Permittee show the location of all man-made features within, passing through, or passing over the proposed permit area. Including, but not limited to: major electric transmission lines, pipelines, and agricultural drainage tile fields. The Permittee states, in section 521.122 of the PAP, that they have shown all such structures on Plate 5-2. Again, this is confusing, since Plate 5-2 only shows disturbed area boundaries and does not extend 1,000 feet outside the permit boundary. In addition, there are no major electric transmission lines, pipelines, and agricultural drainage tile fields within the area with the exception of the culvert under County Road 126. If the only made-man structure in the proposed permit area is a culvert under County Road 126 then the Permittee must plainly state so.

Surface Water Resource Maps

Plate 7-1 shows the locations of streams, seeps, and springs. There are no known perennial streams, lakes, or ponds within the permit and adjacent areas. Table 7-2 lists water rights and Plate 7-3 shows locations of these water rights. Plate 7-3 does not show water right 91-183 (Horse Canyon Creek), held by UtahAmerican Energy on Plate 7-3. Text in Section 724.200 refers to Plate 7-1 for the location of Horse Canyon Creek and Lila Canyon drainage

ENVIRONMENTAL RESOURCES INFORMATION

and Little Park Wash. The PAP mentions the Range Creek drainage: Range Creek lies several miles east of the Lila Canyon area. Many maps and cross sections in the PAP include only a small portion of the Range Creek drainage, but the Range Creek drainage is included on Plates 7-1A and 7-1B. The Permittee needs to extend maps showing water rights at least to the channel of Range Creek.

Well Maps

Three exploration boreholes, IPA-1, IPA-2, and IPA-3, were converted to piezometers to monitor water levels in the area. Casing was perforated at the coal seam. Locations are shown on Plate 7-1.

Two borings were done for observation of ground water in the alluvium in Horse Canyon. The MDC Well, which has been sealed, and the Horse Canyon Well located nearer the Horse Canyon Mine surface facilities are shown on Plate 7-1.

One oil exploration hole was drilled south of the proposed Lila Canyon permit area, in Section 25, T. 16 S., R 14 E., SLM, by Forest Oil Company. The location of the hole is shown on Plate 6-2. According to the Division's records, the well was completed in October 1959. No oil, gas, or water was reported. The well was drilled to a depth of 12,602 feet. It spudded in the Price River Formation and was in that formation to a depth of 370 feet then passed through the Blackhawk Formation from 370 feet to 906 feet, a thickness of 536 feet.

Exploratory boreholes S-26, S-28, and S-31, located south of the Williams Draw Fault, were offset with shallow piezometers A-26, A-28, and A-31 intended for ground water in the alluvium of Little Park (Table 6-3). These piezometers have been plugged and abandoned. These piezometers are not shown on Plate 7-1, although they would have been at the approximately the locations shown for S-26, S-28, and S-31 on several maps in the PAP.

Contour Maps

The Permittee submitted several plates showing the contour of the land on and adjacent to the proposed permit area. The area sloping desert floor to steep cliffs and moderate to steep mountainous slopes. Stream channels are noticeable. There are no large water bodies on or adjacent to the permit area.

Plate 5-1A shows the pre-mining contours for the disturbed area. Several maps, including Plate 5-3 show contours for the entire Lila Canyon area. The contours for Plate 5-3 are based on contours from USGS topographic maps and accurately represent the pre-mining contours for the Lila Canyon Extension.

A qualified, registered, professional engineer prepared, or directed the preparation of, Plates 5-1A and 5-3 and certified them.

Findings:

The information in this section of the PAP is not adequate to meet the requirements of this section of the Regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-521.123 and R645-301-121.200, In the text of section 521.123 of the PAP and on all relevant maps, the Permittee must identify all public roads that exist in, and within 100 feet of, the permit boundary. In section 521.123 of the PAP, the Permittee only refers to County Road 126 as being within the proposed permit area. Yet, in Appendix 5-4 the Permittee explains in detail the existence of Little Park Road and some other public roads within the permit area. To avoid confusion, the Permittee needs to show and label the full right-of-way for County Road 126 and all other public roads on a map that deals with conditions that exist before the permit being issued. To be clear and concise the Permittee should show the road information on two maps, one map for the entire permit boundary and the second for the disturbed area boundary. Note that preexisting structures in the operations section of the TA refer to structures on which construction began before January 21, 1981.

R645-301-521.125 and R645-301-121.200, In the text of section 521.125 of the PAP, and on all relevant maps, the Permittee must identify all existing sediment ponds, permanent water impoundments, coal processing banks, and coal processing waste dams and embankments. In section 521.125 of the PAP, the Permittee mentions the proposed sediment pond. Since the proposed sediment pond is just that, proposed, the statement is confusing. The Permittee must list only those dams and impoundments within the proposed permit area that exist prior to the permit being issued

R645-301-521.150 and R645-301-521.190, The Permittee must show the pre-existing contours on Plate 5-1A as intervals of 5 feet or less. The Division needs the information to establish the pre-existing site conditions.

R645-301-521.111, The Permittee must list all known mine workings in, and adjacent to, the permit area. The Division found mine workings in the area listed in Doelling that the Permittee did not show on Plate 5-1. The Permittee should show those workings or state why they did not list them.

R645-301-521.111 and R645-301-121.300, The Permittee must list the line type for the exploration entries in the legend of Plate 5-1.

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R645-301-521.190 and R645-301-121.200, The Permittee must designate one map as the official disturbed area boundary map and state which map it is in the text of the PAP.

R645-301-521.121 and R645-301-121.200, In the text of section 521.121 and all subsections and related maps the Permittee must identify only the surface and subsurface man-made features that exist on the site prior to the permit being issued.

R645-301-722, The Permittee will submit a map identifying the characterizing of stream reaches showing where mining will take place within 100 feet (horizontal) of a stream channel.

R645-301-622, -722, Resource maps showing water rights, need to be extended at least as far as the channel of Range Creek to help evaluate potential impacts in the Range Creek drainage.

R645-301-622, -722, Water rights 91-4959 (Redden Spring), 91-183 (Horse Canyon Creek), and 91-185 (MDC well), all held by UtahAmerican Energy, are not shown on Plate 7-3.

OPERATION PLAN

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

General

The Permittee proposes to develop surface facilities and mine portals near Lila Canyon. The Lila Canyon surface facilities will be used to access coal reserves in the southern area of the permit. The surface facilities are located in the S1/2 of Section 15, T. 16 S., R.14 E. See Plate 5-5 for the Lila Canyon Extension workings.

SUWA raised the question of why new portals are needed for access to the new leases. Section 520 indicates that use of the old mine passageways for access to the new lease is not possible due to ventilation, flooding, and caving as well as distance to the Part B federal leases. Developing new portals is economical in terms of dollars and time.

The Permittee choose to develop the new mine facilities at the Lila Canyon site rather than use the existing facilities at the Horse Canyon site for three reasons:

1. Development of the Horse Canyon site would entail disturbance of reclaimed ground.

The Horse Canyon mine site was partially reclaimed and received Phase II bond release (Section 528.110). Division records indicate that the reclamation was done in 1990 and 1991, with Phase I bond release granted on February 5, 1997. A Decision Document for Phase II bond release of 51.56 acres was sent to the Office of Surface Mining for their concurrence on October 19, 1999. The area left to be reclaimed is 22.7 acres for a total of 74.26 acres within the permit area. Conditional approval of Phase II bond release was dated November 10, 1999, contingent upon removal of a sediment pond and culvert. Final approval of the Phase II bond release was dated September 6, 2002. Within the 22.7 acres, several buildings at the site remain standing and negotiations are underway for post-mining use of the buildings by a second party. At Phase II bond release, all the backfilling, grading, topsoil placement, drainage controls and vegetation have been completed. The only remaining items are that the site meets the vegetation success standards and complies with the general performance standards.

2. The existing Horse Canyon facilities are not suitable for a large-scale longwall operation.

The old Horse Canyon Mine was not designed to produce 4,500,000 tons of coal per year (Section 520). The Division was not able to obtain complete annual production figures for the Horse Canyon Mine, but in 1969, the mine produced 843,362 tons of coal. The information on Plate 5-1 suggests that coal production between 1970 and 1980 was on a similar scale.

3. The Horse Canyon Mine workings are not in operational condition.

Some of the main pillars were pulled during retreat mining and other areas are underwater. All but one portal has been sealed and backfilled CITATION FOR THIS STATEMENT. While reopening portals and shoring up old mine workings may be an option, such an alternative would be expensive (Section 520).

The Division does not have the resources to independently verify that using the Horse Canyon facilities would be uneconomical nor has the Permittee given the Division detailed economic data to support the claim. The Permittee has offered some good reasons why the Lila Canyon facility should be developed. The Division does not have a compelling reason deny the development of Lila Canyon facility.

The average gradient of the Lila Canyon Extension site is 10%. The gentle slope of the area reduces many of the problems of reclaiming mine site that are developed in steep canyon areas.

Access to the lower Sunnyside seam at this location requires tunneling from the base of the cliffs upwards at a 12% slope through a sandstone rock slope for a distance of approximately 1,200 feet. The inclined portals are referred to as rock slopes in the PAP. The ventilation portal will be driven from underground workings to the surface. See Plate 5-2 for the locations.

While a road could be constructed to the outcrop, reclamation of the road to the standards in the R645 rules would be difficult if not impossible. Development of the rock slope tunnels will be less difficult.

The rock material from two of these tunnels and the portal face-ups will be utilized to create a pad for surface facilities. (Other cut/fill pads will be constructed from subsoils.) The amount of bank rock material that will be removed to construct the rock slopes is 16,650 bank cubic yards. The Permittee assumes a swell factor of 1.5, therefore the loose cubic yards of material would be 25,000 cubic yards.

The material from the rock slopes is by definition underground development waste and coal mine development waste. Coal mine waste is defined as coal processing waste and underground development waste. R645-301-536 requires that all coal mine waste be placed within approved portions of the permit area. The material from the rock slopes will be placed in refuse piles.

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Because the material from the rock slope will not contain coal, or material that is combustible or acid or toxic forming materials the Division will allow the Permittee to use that material as structural fill. Fill or other areas of the disturbed area will come from subsoils.

Initial mining will be conducted by room-and-pillar methods in the Lower Sunnyside Coal Seam. Production in the first year is estimated to be 200,000 tons, the second to fifth year 1,000,000 to 1,500,000 tons per year. If demand increases, the Permittee will install longwall equipment and production could peak at 4,500,000 tons per year.

The PAP proposes mine portal access, ventilation portal, elevated conveyor, coal storage pile and reclaim system, crusher, truck loop and truck loadout, warehouse and storage yard, office, parking and bathhouse facilities, substation, water storage and water treatment facilities (leach field), topsoil storage pile and sediment pond to be developed (Section 520 and Plate 5-2).

To support the new center of activity at Lila Canyon, Emery County will upgrade the existing County Road #126 from State Highway 6 to a corral and from this point will upgrade unimproved roadway RS 2477 from the corral to the Lila Canyon Extension surface facilities (Appendix 1-4).

Findings:

The information provided meets the minimum general requirements of Mining Operations and Facilities.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

An existing structure means a structure or facility used in connection with, or to facilitate, coal mining and reclamation operations, for which construction began before January 21, 1981. A structure constructed before January 21, 1981 does not have to meet the design criteria of structures constructed after that date. However, existing structures do have to meet the performance standards. Note: in the Environmental Section of the TA, existing structures refers to structures that existed prior to the permit being issued.

At the Lila Canyon site, no structures exist that will be used for coal mining and reclamation activities. Within the disturbed area, a culvert lies below County Road 126. The culvert is in poor shape and needs to be removed and replaced.

The Permittee states in section 526.115 of the PAP that the County will modify or reconstruct the culvert within the disturbed area boundary. If the County will do the work then the Division assumes that the project is a County project and does not involve the Permittee.

The Division assumes that the County will take measures to protect the environment and public during removal/replacement of the culvert. The Division does not regulate construction of public roads in permit areas.

The culvert that passes under County Road 126 will connect to the main bypass culvert that directs water from the undisturbed area to the discharge point and acts as a decant for the sediment pond. During reclamation, the Permittee will have to modify the culvert system. The modifications will include removing the bypass culvert and sediment pond.

The Permittee must describe how the bypass culvert will connect to the culvert under County Road 126. In addition, the Permittee must explain what modifications to the culvert and the surrounding slope will take place during reclamation.

Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of the Existing Structures section of the Regulations. Prior to approval and in accordance with:

R645-301-526.115.4 and R645-301-526.116.1, The Permittee must show 1) what section of the culvert the County will install and what part the Permittee will install, 2) during reclamation, what work will be done by the County regarding modification of the culvert. The Division assumes that when the undisturbed bypass culvert is removed, modifications to the culvert will include a fluted inlet and the placing of riprap on the surrounding slope.

PROTECTION OF PUBLIC PARKS AND HISTORIC PLACES

Regulatory Reference: 30 CFR784.17; R645-301-411.

Analysis:

A determination of the existence of known cultural resources listed or eligible for listing in the National Register of Historic Places, public parks, or units of the National System of Trails or the Wild and Scenic Rivers system within the proposed permit extension cannot be made until all cultural resources information is provided.

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The Turtle Canyon Wilderness Study Area overlaps with the proposed addition to the permit area in the following locations:

Township 16 South, Range 14 East
Section 13, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$
Section 24, NE $\frac{1}{4}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ NE $\frac{1}{4}$

Township 16 South, Range 14 East
Section 19, SE $\frac{1}{4}$ SW $\frac{1}{4}$, Lots 3 and 4
Section 30, SW $\frac{1}{4}$ NE $\frac{1}{4}$

The EA addresses wilderness study areas and the anticipated effects of subsidence in these areas.

In January 2002 the BLM published a document titled *Revisions to the 1999 Utah Wilderness Inventory*. In this document, the BLM addresses questions and concerns raised during the initial scoping project, which began March 1999. The BLM received public comments concerning the Turtle Canyon and Desolation Canyon Inventory Units. Many of these comments questioned the wilderness character determinations made in the *1999 Utah Wilderness Inventory*, for instance, questions concerning: impact from surface structures due to past mining; access for water monitoring; areas degraded due to coal mining activities and drill stem pipes. The BLM found that the impact associated with past mining activity was found substantially unnoticeable. Access for water-monitoring sites were determined to be a "vehicle ways" and not roads because the "ways" are not maintained or regularly used. The area associated with the Lila Canyon Extension facilities has been removed by the BLM from the inventory.

Findings:

Information provided in the application is not sufficient to meet the minimum Protection of Public Parks and Historic Places requirement of the regulations. Refer to the deficiency in the Historic and Archaeological Resource Information section of this TA.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

The PAP proposes new portal, loadout and office facilities to be developed near Lila Canyon. Currently the road to the site is unimproved as shown on Plate 1-1. Appendix 5-4 of the PAP provides background and ownership information for the existing access roads:

- from Horse Canyon to the mine site,
- County Road #126 from Highway 6 to the mine site, also known as unimproved road RS2477 south of the mine site.

Emery County will upgrade and pave the existing County Road #126 (2.63 miles) and RS2477 roadway from State Highway 6 to the Lila Canyon Extension surface facilities (Appendix 1-4, Agreement between Emery County and UEI dated October 19, 1999).

The permitting status of the road was questioned by the Division when an article entitled “Utah DOGM Office Clears Way to Process Lila Canyon Permit,” was published in the Sun Advocate, Thursday February 28, 2002. The press release stated that UEI planned to build a 4.7 mile road from the mine site to a Union Pacific rail line. A public notice placed in both the Sun Advocate and the Emery County Progress in April 2002, subsequently clarified that Emery County will construct and improve the 4.7 mile road from the mine site to U.S. Highway 6.

The Permittee states in section 521.133 of the PAP that they do not propose to relocation any public road. Within the permit area, there are two public roads, the Little Park Road and County Road 126. The Permittee does not plan to relocate either road. The county road 126 falls partly within the permit area (Section 521.123 and Plate 5-2).

The Permittee does plan to tie the bypass culvert into Emery County’s culvert under the Lila Canyon Road. Emery County will install the culvert and has consented to mining operations within 100 feet of the Lila Canyon Road. To protect the public, Emery County requires a 6-foot chain link fence between the disturbed area and the Lila Canyon Road (see Appendix 1-4, letter from the Emery County Road Department dated January 10, 2001). The Division believes that the fence will offer the public protection from the hazards associated with the mining and reclamation facilities that are located within 100 feet of County road.

Plate 5-2 shows the location of the proposed culvert, the Lila Canyon Road, the chain link fence and the sediment pond. Cross-sections for the sediment pond area are shown on Figure 1 Appendix 5-7A-1 and Figure 1 Appendix 5-7A-2.

Findings:

The information provided in the PAP does not adequately describe the relocation of the public road. Prior to approval and in accordance with:

R645-301-121.200, The Permittee must update section 526.116 of the PAP to state that in addition to the office complex and sediment pond the topsoil storage area and security building are also within 100 feet of County Road 126.

OPERATION PLAN

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244, -301-420.

Analysis:

First year production from the mine is estimated to be 200,000 tons, increasing in the second through fifth year to between 1,000,000 and 1,500,000 tons. Long wall mining could be utilized to generate as much as 4,500,000 tons a year (Section 523).

Appendix 4-3 contains correspondence between UEI and the Department of Environmental Quality, Division of Air Quality (DAQ). In the cover letter for the Notice of Intent dated December 22, 1998, UEI requested approval for a Minor Source of up to 2,000,000 tons/year. An Approval Order (DAQE-702-99) was issued August 27, 1999.

The Approval Order (AO) indicates public comments were considered in developing the requirements of the AO for this new source. The DAQ received five public comments on degradation of the environment in general and one comment referring to air quality degradation in particular.

The AO is predicated on UEI operating according to the Notice of Intent submitted to the DAQ on December 24, 1998, and additional information submitted to the DAQ on February 19, 1999 and May 11, 1999.

The following equipment was approved with the AO:

- One enclosed crusher rated at 500 tons/hr equipped with dust suppression spray at its exhaust.
- One truck loading facility with enclosed 450 tons surge bin and sprays as needed
- One stacking tube with associated coal stockpile
- One reclaim system conveyor
- Associated conveyors equipped with dust suppression sprays at all transfer points.
- Mobile diesel equipment.
- 0.68 miles of paved road, posted speed limit 25 mph.

The requirements of the AO include:

- annual training of employees;
- control of disturbed or stripped areas through treatment;
- maintenance of 4.0% moisture content of fines;
- watering storage piles;
- limitations on the silt-size coal fines in stored coal and haul roads;

- visible emissions limits;
- maintaining the surface material in a damp/moist condition;
- a production **limit of 1,500,000 tons of coal** per rolling 12 month period;
- **a consumption limit of 63,000 gallons of diesel fuel** per rolling 12 month period;
- use of #2 fuel oil only; and
- sulfur content of fuel oil or diesel is not to exceed 0.5% by weight

The AO from the DAQ ensures that particulates and pollutants will be controlled through very specific dust suppression requirements, pollution control equipment, limited fuel consumption and proper equipment maintenance, limited production, employee training and record keeping. The Division finds that the Permittee has obtained the required DAQ permit and is in compliance with that permit.

Findings:

The information provided meets the minimum regulatory requirements of the Air Pollution Control Plan section of the Rules.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

As part of the federal mine plan approval and to meet the requirements of the federal leases, the Permittee is required to submit a resource recovery and protection plan (R2P2) to the BLM. The BLM staff analyzed the R2P2 for maximum economic recovery and found that the Permittee met that requirement.

The R2P2 is based on the Permittee operating within a logical mining unit (LMU.) The location of the LMU is not shown on any maps in the PAP. Plate 5-4 has the LMU boundary in the legend but the boundary is not shown on the map. Because the LUM boundary overlaps or is identical to the permit boundary, the Permittee may wish to show the LUM on another map.

The mine plan is based on the assumption that all the coal in the LUM is marketable. The coal in the Lila Canyon area is higher in sulfur than coal in the surrounding area. If the sulfur value exceeds contract specification, the Permittee may be unable to market the coal. Should that occur the Permittee would have to modify the mine plan and some coal would not be mined.

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Expansion of the mine to the west is impossible because the coal outcrops on the western escapements. To the north are the old Horse Canyon Mine workings. The Permittee has looked at the potential for reworking the area and determined that there are no recoverable resources. Deep cover limits expansion to the east. The economic cut off to coal based on depth of cover varies within the area from 2,500 feet to 3,000 feet of cover. Therefore, significant expansion to the east is limited at this time due to economics and technology.

Expansion to the south could be possible. The Permittee needs to discuss the possibility of expanding the operation to the south.

The Division staff reviewed the mine plan and found all significant coal reserves within the permit area, LUM, which could be recovered will be recovered. The Division bases their findings on several factors including technical analysis from other agencies, such as the BLM, for maximum coal recovery.

Coal will be recovered using a continuous miner. Section 522 discusses the use of barrier pillars to isolate the Horse Canyon Mine from the new Lila Canyon Extension, to ventilate, to provide independent escape routes, to protect escarpments, and to possibly retain large quantities of mine water.

Federal leases cover 5,544 acres of coal reserves (Table 1.1, page 11, Chapter 1), but Horse Canyon Parts A and B will mine through 5,163 Federal lease acres according to Table 4.2A, Chapter 4.

The first year production is estimated to be 200,000 tons, increasing in the second through fifth year to between 1,000,000 and 1,500,000 tons. Plans project the utilization of longwall mining to generate as much as 4,500,000 tons a year (Section 523). An increase of this size would require modification of the MRP.

Findings:

The information provided in the PAP does not adequately describe the relocation of the public road. Prior to approval and in accordance with:

R645-301-522 and R645-301-521.190, The Permittee must show the logic mining unit boundaries on Plate 5-4 or an equivalent map. The Division is aware that the permit boundaries and the LMU boundaries overlap so showing both on the same map could be difficult.

R645-301-522, The Permittee must discuss the potential for expanding the mine. The Division is interested in future plans for expanding to the south and east.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

General

The Permittee included maps of the underground workings in the PAP. Plate 5-3, Subsidence Control Map, shows the location of water rights, springs, and eagle nests. The map also shows the location of the underground mine workings and the angle-of-draw. Plate 5-5, Mine Map, shows the schedule for mining and the location of first mining areas, full extraction areas, and main entries that will be protected. The R2P2 contains additional information on locations of pillars, entries, extraction ratios, and measures taken to prevent or minimize subsidence and related damage.

Renewable Resources Survey

The Permittee conducted a survey and found that no structures exist within the area of projected subsidence. The Permittee did find that some renewable resources including seeps and springs exist in the area of projected subsidence.

Plate 5-3, Subsidence Control Map is at a scale of 1:12,000. The map shows the location of the springs and water rights. The Division checked the location of several springs and found that the locations on Plate 5-3 are not accurate. The Permittee must show the precise location of each spring in order to determine what the potential subsidence impacts could be. Some dirt roads exist in the subsidence zone, but do not appear on the subsidence map.

R645-301-525.200 lists those areas where underground coal mining and reclamation activities cannot be conducted beneath or adjacent to. The protected areas include public buildings and facilities, churches, schools, and hospitals. In addition, areas with impoundments of 20 acre-feet or more of water are included unless it can be proven that subsidence will not damage the structure. Aquifers that are an important source of a public water supply are also included. The subsidence survey found that no public buildings, public facilities, churches, schools, hospitals, impoundments, bodies of water with 20 acre-feet or more storage capacity, or aquifers that are a significant source of a public water system are located within the potential subsidence area.

The Division can suspend underground mining as stipulated in R645-301-525.220, which regulates damage to urbanized areas, major impoundments, and perennial streams. None of those items is located in the proposed subsidence zone.

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In Chapter 7 of the PAP, the Permittee lists the location of each State appropriated water right, the amount of water associated with the right and the water use. The Division will rely on this information to resolve any problems involving water replacement issues.

On Plate 5-3, the Permittee does not list what the blue dots represent in the legend. On Plate 7-3, the blue dots represent underground water sources.

The location of the springs and other water rights information is not consistent on Plates 7-3 and 5-3. For example, Plate 5-3 does not show spring source 91-2521 and the location of spring source 91-617 is not constant on the two maps.

On Plate 5-3, the Permittee shows the location of eagle nests. Some of the nests are within the subsidence zone. The Permittee describes mitigation for the loss of eagle nests in Chapter 3 of the PAP.

The Division has received some public comments about the potential for subsidence to damage snake dens. DWR and BLM wildlife biologists, in consultation with the Division, have determined that any loss of snake dens to subsidence would be random and a minor impact to the population of snakes. For all wildlife issues, see the Operation Plan, Fish and Wildlife Information section of this TA.

R645-301-525.130 requires the Permittee to provide copies of the water rights survey and any technical assessment or engineering evaluation to the property owner, the water conservancy district, if any, where the mine is located and to the Division. The Permittee did not provide the Division with proof that they gave the water rights survey information to the property owners or water conservancy district.

Subsidence Control Plan

The Permittee will prevent subsidence from occurring on the escarpments by only conducting first mining in the area. The Division will reassess control of subsidence in other areas after all resource information is collected.

Description of Coal Mining Method

Coal mining will begin in Section 15, T. 16 S., R. 14 E., in the Lower Sunnyside Coal Seam. Development of the Lower Sunnyside Coal Seam will be down dip toward the east. Two 1,200-foot tunnels will access the coal seam. The Permittee will drive the tunnels upward from the cliffs at a 12% grade. The Permittee will develop the ventilation fan portal from the underground workings to the surface. See Plate 5-2 for the location of the portals and Plate 5-5 for the mine workings.

The Permittee will conduct initial mining by the room-and-pillar method. Production in the first year will be around 200,000 tons, and around 1,000,000 to 1,500,000 tons per year during the second to fifth year. If demand increases, the Permittee will install longwall equipment and production could peak at 4,500,000 tons per year. The estimated life-of-mine is 20 years.

Plate 5-3 shows the areas where subsidence could occur, while Plate 5-5 shows the timing and sequence of mining. That information is sufficient for the Division to determine what areas will subside, and when.

Mine Map

Plate 5-5, Mine Map, shows the schedule for mining and the location of first mining areas, full extraction areas, and main entries that will be protected.

Plate 5-5 shows the underground workings and the areas where first mining only will be utilized to protect escarpments and the raptor nests that may exist on the escarpments. The areas to be protected from subsidence are confined to the western edge of the underground mine.

Subsidence Monitoring

The Permittee will initiate subsidence monitoring in an area before any second mining begins in that area. The subsidence-monitoring plan will consist of the following:

- Aerial subsidence monitoring
- A 200-foot grid
- 12-16 control points
- Six of these points outside the subsidence zone
- Accuracy of plus or minus 6 inches horizontally and vertically
- A map of subsided areas
- Annual surveys in active subsidence areas

Subsidence monitoring will continue for five years after mining stops, or until subsidence is complete. If, for three years in a row, the subsidence is measured to be less than 10 percent of the highest subsidence year, subsidence will be determined to be complete, and no additional monitoring for that area will be required.

The Permittee will conduct a ground survey in conjunction with the quarterly water-monitoring program. They will note any cracks observed and report them to DOGM.

The two main objectives of the subsidence monitoring program are to determine 1) when subsidence starts and stops and 2) if any damage has occurred. The aerial monitoring program, which measures ground movement, is the best way to determine when subsidence begins and

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ends. Ground surveys are useful to determine if any subsidence damage has occurred. The Permittee should pay particular attention to any stream channels with less than 1000 feet of cover to the coal.

Subsidence Control Measures

The Permittee plans to use just one subsidence control method in the Lila Canyon Extension, to protect the escarpments. They will leave barrier pillars and only allow first mining within 200 feet of the outcrop barrier. This will protect the escarpments.

Anticipated Subsidence Effects

The main panels of the Horse Canyon Mine (Permit Area A) in which past operators have conducted retreat mining have dimensions of approximately 1,200 feet wide by 4,000 feet long. The cover (h) in these areas is approximately 2,000 feet. Using the methods described in the National Coal Board's *Subsidence Engineers' Handbook* the S/m ratio for this geometry would be 0.55 where "S" is the maximum subsidence and "m" is the seam extraction thickness. For an average seam extraction thickness of 12 feet, the total subsidence would be 6.6 feet. However, as described on page V-12 of the Horse Canyon MRP (Part A), the major impacts of subsidence are due to extension strains and not to total vertical subsidence. The prediction of average extension strain is accomplished with the use of the formula:

$$+E = 0.75 S/h \text{ where } S = \text{Subsidence and } h = \text{depth of cover}$$

The solution of this equation for the Horse Canyon Mine configuration discussed above produces a predicted, average extension strain of 2.5×10^{-3} which is less than that the limiting strain of 5×10^{-3} for protecting surface waters and groundwater resources. Thus, it is unlikely that the gradual compression expected over much of the subsidence area will have any deleterious effects on the overlying renewable surface resources. As reported in Chapter V of the Horse Canyon MRP (Part A), the cover thickness of over 2,000 feet is also much greater than the limiting thickness of 450 feet.

A cantilever effect of symmetrical subsidence on either side of thick pillars can greatly enhance the amount of extensive strain. The Horse Canyon MRP (Part A) indicates, in Chapter V, that Dunrud demonstrated this effect at the Geneva (Horse Canyon) mine over the barrier pillar separating the Geneva and Book Cliff mines. A nearly vertical break line occurred over the pillar with the appearance of large surface fissures hundreds of feet long and as much as 3 feet wide. The cover thickness in this area was about 900 feet. Such features would obviously have the greatest effect on the surface and groundwater resources in the area.

The pace at which subsidence occurs depends on many controls including the type and speed of coal extraction, the width, length and thickness of the coal removed, and the strength and thickness of the overburden. Observations of subsidence by Dunrud over the Geneva and Somerset Mines indicate that the subsidence effects on the surface occurred within months after mining was completed, and the maximum subsidence was essentially completed within 2 years of the finishing of retreat mining as reported in Chapter V of the Horse Canyon MRP (Part A).

In the 1992 annual subsidence report for the Horse Canyon Mine, the Permittee reported subsidence features outside of the Horse Canyon permit area, but within the area underlain by workings of both the Book Cliffs Coal Mine and the Geneva Coal Mine. The surface subsidence features were observed in Sections 9, 10, 15 and 16, T. 16 S. R.14 E. Those areas have cover averaging 800 feet but do not exceed 1,000 feet of cover. The Permittee noted a number of the subsidence features including:

- Open jointing and fissuring related to cliff face retreat and spalling.
- Swarms of fissures related to extensional ground movements above, or adjacent to, the property-boundary barrier pillar between the Book Cliffs and Geneva Mines. The fissures are generally parallel to sub-parallel to the barrier pillar and are developed primarily along existing regional joint sets. Individual fissures can reach hundreds of feet in length and as much as three feet in width. Vertical displacement on the order of a few inches has been observed at some localities.
- Modifications in vegetation and soil structure were often associated with fissure development. Fallen trees were observed along several fissures and cryptogamic soil communities had been disrupted locally.
- At one or two locations, cool air was felt emanating from the larger fissures.

The 1992 annual subsidence survey showed that the only subsidence related activity noted within the Horse Canyon permit area was cliff spalling that occurred in 1958. Close examination of the outcrop areas and soil covered slopes directly above, and to the north of, the area of cliff failure did not reveal any evidence of mine subsidence features.

Most of the area the Permittee plans to subside in the Lila Canyon Extension has greater than 1,000 feet of cover. In areas with more than 1,000 feet of cover, no surface subsidence features are anticipated with the exception of ground lowering.

In areas with less than 1,000 feet of cover, subsidence features could include tension cracks, fissures, sinkholes, and ground lowering. In the southwest part of the permit area, the cover drops to less than 500 feet. Parts of Little Park Wash, an ephemeral stream, are located in the shallow cover area.

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Should subsidence damage Little Park Wash the most likely causes would be cracks, fissures, or sinkholes. Should Little Park Wash be damaged the Permittee could most likely make repairs by hand. If equipment is needed, the Permittee could access most areas by Jeep trails.

Minimize Damage to Non-commercial and Occupied Buildings

No non-commercial or occupied buildings exist within the proposed subsidence zone.

Replacement of Adversely Affected State-Appropriated Water Supplies and Mitigation to Material Damage of Land and Protected Structures

R645-301-525.400 requires that the Permittee describe how they will replace any State-Appropriated water supplies that may be damaged by mining operations. The Division needs to have a good idea about what type of alternative water sources are available. Possible sources for water replacement include, but are not limited to, piping or trucking water, transferring water rights, sealing surface fractures and the construction of wells. The Permittee needs to evaluate which methods would be available in the area and when they would use each method.

Repair of Damages

The Permittee committed to restore surface lands to the extent technologically and economically feasible. While the use of heavy equipment in some areas is not practical, there are alternatives that others have used to reclaim mines in Utah and that have been quite successful. Those methods include manual labor and the use of explosives. The Utah Abandoned Mine Lands (AML) Program has used explosives in wilderness areas to eliminate hazards caused by mining.

Since no structures exist within the subsidence zone, the Permittee does not have to address how they will repair damage to buildings and other related structures.

Two items that are of concern to the Division are roads and streams. All dirt roads in the Lila Canyon tract are in areas with over 1,000 feet of cover or where mining will not take place. If subsidence damage should occur to the roads, the Permittee has committed to repair the damage by regrading the road. Since the roads will be accessible to earthmoving equipment, the Division finds the commitment adequate.

The Division is concerned that subsidence could damage the ephemeral streams located in areas of less than 1,000 feet of cover. Part of Little Park Wash, an ephemeral stream, has less than 1,000 feet of cover. Based on experience in the area, subsidence could cause cracks, fissures, or sinkholes to form. Should those features occur, the Permittee would most likely be able to repair the damage using hand methods. If hand methods prove to be impractical, the

Permittee could have the option of moving equipment into the area. Jeep trails, which cover most of the area, could be used to move equipment in if necessary.

Rebuttable Presumption of Causation by Subsidence

The Permittee has used an angle of draw of 21.5° in its subsidence calculations. The rebuttable presumption of causation for damage within the angle-of-draw, means that if damage to non-commercial buildings or occupied residential dwellings occurs as a result of earthen movement, the assumption exists that the mining caused the damage, unless the Permittee can prove otherwise. R645-301-525.541 assumes an angle-of-draw of 30° unless the Permittee can demonstrate that another angle-of-draw is more appropriate. Since there are no non-commercial buildings or occupied residential dwellings in the area the 30° angle-of-draw rebuttable presumption does not apply.

Adjustment of Bond Amount for Subsidence Damage

The Division has received a comment from SUWA requesting that additional bond be required to ensure that the Permittee will repair subsidence related damage. The Division does not bond for subsidence damage that has not yet occurred, except for conditions outlined in R645-301-525.550. The general practice to protect buildings and other structures is for the Permittee to purchase liability insurance, see R645-301-525.520, R645-301-525.530, and R645-301-830.500. Additional bond will be required, when subsidence-related material damage has occurred to land, structures, or facilities or where contamination, diminution, or interruption to a water supply has occurred.

Performance Standards For Subsidence Control

The Permittee will comply with all provisions of the approved subsidence control plan.

Notification

The Permittee is required to notify the water conservancy district, if any, and the owners and all occupants of surface properties and structures above the underground workings. The notification will include the specific areas where mining will occur and the location or locations where the Permittee's subsidence control plan may be examined

Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of this section of the Regulations. Before approval, the Permittee must provide the following in accordance with:

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R645-301-525.110, The Permittee must show the precise location of each seep, spring, stock pond, existing water right and dirt road on Plate 5-3. Note that the information on Plate 5-3 is inconsistent with that of Plate 7-3. See the analysis section for more details.

R645-301-525.120 and R645-301-121.200, The Permittee must define the blue dot symbol on Plate 5-3.

R645-301-525.130, The Permittee must show that all property owners in, and around, the Lila Canyon tract, as well as the water conservancy district received copies of the water rights survey.

R645-301-525.130 and R645-301-121.200, The Permittee states in section 525.130 that they do not entirely agree that R645-301-525 requirements should apply. The Division is unaware of any options that the Permittee has about the need to comply with the R645-301-525 regulations. The Permittee must discuss those issues in the PAP. The discussion in Chapter 7, Section 727 is inadequate to comply with R645-301-525.130 and R645-301-121.200.

R645-301-525.400, The Permittee must list the possible sources and methods to replace State-Appropriated water supplies that subsidence may damage. The Permittee needs to determine what replacement sources are available and how they will implement them.

SLIDES AND OTHER DAMAGE

Regulatory Reference: 30 CFR Sec. 817.99; R645-301-515.

Analysis:

The requirements for slides and other damage consist of two parts. The first part requires that at any time a slide occurs, which may have a potential adverse effect on public, property, health, safety, or the environment, the person who conducts the underground mining activities shall notify the Division by the fastest available means and comply with any remedial measures required by the Division. In section 515.100 of the PAP, the Permittee commits to phone the Division if a slide occurs (Section 515) and inform them of the slide and proposed remedial plan. The Division will then determine the adequacy of the remediation plan. The Permittee has also committed to report any potential hazards found during impoundment inspections.

The second requirement is that the PAP will incorporate a description of notification when potential impoundment hazards exist. The requirements for the description are: If any examination or inspection discloses that a potential hazard exists, the person who examined the

impoundment will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action. If the Permittee cannot formulate or implement adequate procedures, the Division will be notified immediately. The Division will then notify the appropriate agencies that other emergency procedures are required to protect the public. In section 515.200 of the PAP, the Permittee commits to notify the Division of any impoundment hazards they discover during an inspection and the methods that will be used to remedy the situation.

Findings:

The Permittee meets the minimum regulatory requirements for slides and other damage.

FISH AND WILDLIFE INFORMATION

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

Analysis:

Protection and Enhancement Plan

Section 332 (pg. 13) states: “[UEI] employees and consultants...have numerous years of experience mining the Book Cliffs and Wasatch areas and none have observed nor are aware of any negative impacts on wildlife on vegetation, as a result of subsidence, with the exception of escarpment failure and disruption of surface or ground water”. The Permittee will protect escarpments from subsidence with a minimum of 200’ barriers. There should be no effects of subsidence on surface or ground waters because the permit area has only ephemeral flow associated with precipitation events. (pg. 13). The Permittee supports to:

- Monitor mined portions each spring for evidence of subsidence according to the subsidence control plan in section 525 (pg. 14).
- Monitor ephemeral stream channels in areas of potential subsidence. No monitoring program provided. (pg. 13).
- Monitor vegetation in areas of potential subsidence according to the following program:
 - Monitor vegetation using of infrared aerial photography every five years.
 - Ground-truth loss of vegetation.
- Develop a mitigation plan and submit the plan to the Division for approval (pg. 14) if vegetation and wildlife are impacted. Mitigation may include:
 - Enhance habitat by increasing forage productivity in undisturbed areas.
 - Provide water sources.

The PAP states that the “Applicant does not plan to monitor any wildlife species during the life of the operation with the exception of raptors” (pg.18; sec. 333.200). SUWA commented

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that all key wildlife species, not only raptors, should be monitored. The Division consulted with DWR and BLM and no additional monitoring of key wildlife species will be required at this time. The Division may reassess the need to monitor key wildlife species during mining and as conditions, change or information becomes available. Although the Permittee plans to continue to monitor raptors, the Division distinguishes and requires additional requirement to survey the Mexican spotted owl according to USFWS.

SUWA submitted comments concerning the coal haul road and impacts to wildlife. SUWA stated that the PAP statement, "... operational activities at the site will impact the wildlife slightly. But ... most of the wildlife...will either accept or adjust their behavior to coexist with the operation" (pg. 16; sec. 333) is dismissive and unsupported, and does not satisfy the rules. The PAP now provides observations that may support this "dismissive" statement. These observations include ungulates and a few other mammals using mine facilities/area for habitat and sediment ponds for drinking water.

The Division is concerned that the few species noted as adapted to mining operations is limited. There may be other wildlife species that are less adaptable to mining impacts and may not coexist with mining operations. The Permittee states in an earlier section (pg. 9; 322.220) that "Rocky Mountain big horn sheep appear to have a low tolerance for disturbance. Considering the low population density and the abundance of suitable similar habitat this impact appears to be minuscule". Lila Canyon and the drainage in the southwest corner of the permit are important canyons and used by the sheep. Although Table 3-2 (pg. 9) shows 800 acres of sheep habitat, this statement is contradictory because any impact may be significant to a species of low population density (approximately 25 according to EA UT-070-99-22). Remove this incorrect and contradictory statement (R645-301-121.200). Furthermore, the PAP states (pg. 9; 322.220) that the proposed 40.77 disturbed acres is also not critical to elk or deer winter range. Plate 3-1, however, shows that this disturbed area is critical habitat for mule deer. Clarify the inconsistency between the paragraph on page 9 and habitat representation on Plate 3-1 (R645-301-121.200).

According the DWR, Rocky Mountain bighorn sheep spend all year along the escarpments in the Lila Canyon area of the Book Cliffs. DWR and the Division visited the proposed disturbed area on June 11, 2002. Prior to the visit, the DWR representative was concerned that sheep may need to move further up the cliff when traveling the escarpments because of the mine and that sheep would likely leave the area. After the visit, the DWR representative felt that the sheep use of Lila Canyon may not be affected. The change in opinion may be because the DWR representative was not familiar with the specifics of the mine plan until the site visit. (pg. 9; sec. 322.220).

All suitable water encountered during mining will be discharged in a manner that it becomes available to wildlife. Ensuring water quality suitability is a requirement of the UPDES discharge permit. The application discusses the possible benefits of water in the sediment pond to wildlife in Chapter 3, page 20, as follows: "In the event water in the pond were to contain any

material which would be hazardous to wildlife (ex: oil, grease), the material would be removed by the use of petroleum selected filtration material...when an apparent sheen is visible. The pond will be monitored visually daily...for oil and grease” (pgs.19/20; sec. 333.200).

The DWR commented that Lila Canyon, more particularly the water sources up the canyon, are heavily used by chukars, and they feel the mining operations near the mouth of the canyon will affect these birds. No mining is planned under Lila Canyon. Effects will be from the disturbance at the mouth of the canyon. (pg.19; sec. 333.200).

The Permittee plans to construct a culvert and sediment pond in the southwest portion of the disturbed area. This drainage is used by wildlife as a transportation corridor. It is not obvious to the Division that the mine needs to disturb this drainage, when there are islands of undisturbed areas on the pediment within the disturbed area boundary. Regulation R645-301-358 requires minimizing disturbances and adverse impacts. The Division recommends that operation activities are kept out of the drainages. (R645-301-358.400; R645-301-521.141; R645-301-526.222).

The conveyor from the rock tunnel to the run of mine coal stockpile is elevated to avoid restriction of large mammal movement. Other conveyors are close enough to the loadout and other facilities that it is unlikely that large mammals will use these areas. The only fence shown on the surface facilities map is along the road. It is about 1000 feet long. The fence will not impede large mammal movement up-canyon, but will restrict movement in the drainage to the south. If the sediment pond is moved as recommended above, the fence can remain out of the drainage.

The Permittee developed a mitigation plan during the EA process (Sec. 333). The plan is a habitat enhancement project for about 70 acres of pinyon-juniper woodland, shrubs, forbs, and grasses, as well as to install two guzzlers. The mitigation will profit both big game and raptors. SUWA commented on the need for cultural resource and T & E clearances on mitigation projects. Any requirements for Cultural Resource and T & E clearances will be addressed by the BLM and DWR prior to disturbance. The Division did not participate in this mitigation development. Furthermore, the Division would have suggested other alternatives than those that have been chosen.

The Permittee committed to annually train mine employees on environmental awareness (pgs. 17/18; R645-301-333). Training topics include:

- Adherence to firearm and off road vehicle laws.
- Avoidance during stress periods, such as fawning times.
- Caution while driving during dawn, dusk, and nighttime hours.
- Recognition of threatened or endangered species.
- Instructions to remove wildlife carcasses well off the road.

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The Permittee agrees to notify DWR and request that large carcasses are moved to safeguard raptors. The Permittee will instruct personnel as to current regulations pertaining to off-road vehicle and firearm use.

Endangered and Threatened Species

The Division cannot fully analyze the operational effects on T & E species until all the baseline resource information is provided. As mentioned above, the Permittee must provide:

- Habitat impact assessments for the bald eagle.
- Occurrence surveys and habitat impact assessments for Mexican spotted owl.
- Occurrence surveys and habitat impact assessments for the San Rafael cactus.
- Quantitative water consumption impact assessments for bonytail chub, Colorado pikeminnow, Humpback chub, and razorback sucker.
- Suitable habitat assessment for specific TE and sensitive plant species.

The Fish and Wildlife Service commented in a letter dated April 14, 1999 (App. 3-3), that there should be an evaluation of effects on the Colorado pikeminnow (formerly the Colorado squawfish) on a water discharge line to the Price River. This discharge line was apparently proposed early in the planning process for the mine, but it is no longer being planned.

Water consumption by the proposed operation could jeopardize the continued existence of or adversely modify the critical habitat of these species. Although the PAP briefly addresses water discharge (pg. 14; sec. 332), it must address the adverse effects to the four Colorado River endangered fish species: the Colorado pikeminnow, the humpback chub, the bonytail chub, and the razorback sucker. Effects must be addressed by calculating the amount of water used by the mine (R645-301-333). Quantitative water consumption impact assessment should include evaporation from ventilation; coal preparation; sediment pond evaporation; subsidence effects on springs; alluvial aquifer abstractions into mines; postmining inflow to workings; coal moisture loss; and direct diversions. Mitigation is required if the loss is estimated to be greater than 100 acre-feet per year.

SUWA commented that UEI has not assessed the potential impact of mine water discharge increasing salinity by running over the Mancos Shale before it drains to the Price River. Increasing salinity is in conflict with the Colorado River Basin Salinity Control Program and potentially could affect the Colorado River endangered fish. The Division contacted the USFWS and they stated salinity is not a concern to the fish, however, selenium is a concern. The Permittee should address the potential for increased selenium and perhaps commit to monitor at the point of discharge into the Price River should waters ever reach that point. (R645-301-333)

The Division concerning the mine water discharge and the Colorado River Basin Salinity Control Program contacted the Bureau of Reclamation (BOR). The BOR has no regulatory requirement for salinity control. However, if the mine discharges and contributes to salinity, then BOR would be interested in working with the mine to reduce the output. Working with the mine could include the BOR paying to pipe the water to the Price River. The BOR also stated that since the BLM has salinity mandates, they should be the agency that addresses this issue.

The Mexican spotted owl protection plan cannot be addressed until all resource information has been provided.

Bald and Golden Eagles

Plate 5-3 shows raptor nests and includes subsidence limits. Two golden eagle nests are within the subsidence area. The Permittee's consultant, EIS, discussed the nests near the facilities with USFWS, DWR, and BLM during the EA process (Volume 2, page 11). There is a high probability that these nests will be abandoned and subsidence is a moot point. However, if the USFWS determines in the future that the loss of the nest due to subsidence is a "taking", then a permit must be obtained before subsidence is allowed. The mitigation plan for 70 acres of habitat improvement described above was developed for loss of these nests.

The Permittee commits to conduct a raptor survey to ensure that raptors, their nests or young are not adversely affected through any mining or mine-related activity (Sec. 358.200). If any previously unknown nests are found, it may be necessary to develop protection or mitigation plan. A one-half mile buffer zone of no disturbance will be established during critical nesting periods for raptors. This buffer zone is adequate to protect eggs and chicks from abandonment. The buffer zone in combination with a mitigation plan, discussed above, should be adequate for the loss of most nests near the mine. If any nests are active when the Permittee plans to begin construction, it may be necessary to delay construction until the nesting season has ended.

As the mitigation projects are completed, a summary should be included in the MRP. If the MRP is not amended, it is easy to lose track of what was accomplished. If the Permittee or anyone else visits the mitigation sites, general comments on use should be noted and reported to DWR and the Division.

R645-301-358.510 requires that the operator ensure that power lines used for or incidental to coal mining and reclamation operations within the permit area are designed, constructed and maintained to minimize electrocution hazards to raptors. The application contains a commitment to this effect. The USFWS recommends application of power line designs, such as those in the Avian Power Line Interaction Committee's Mitigating Bird Collisions with Power Lines: the State of the Art in 1994, or Suggested Practices for Raptor Protection on Power Lines: the State of the Art in 1996, prepared for the Edison Electric Institute/Raptor Research Foundation, Washington, D. C. The West Ridge mine, a mine

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developed in the Book Cliffs coalfield in 1998, has located all power lines underground. The Division suggests UEI do the same.

Wetlands and Habitats of Unusually High Value for Fish and Wildlife

According to the PAP, there are no wetlands or riparian areas within the proposed addition to the permit area. While there are a few springs in the area, there are no perennial drainages. The resource section of this TA contains a deficiency requesting additional information concerning the flora and fauna surrounding the springs.

Subsidence

SUWA commented that subsidence could damage snake dens. DWR and BLM wildlife Biologist in consultation with the Division have determined that any loss of snake dens to subsidence would be random and a minor impact to the population of snakes. No surveys are required, but additional information is requested on the impacts of subsidence in areas of less than 1000 feet of cover. (see deficiencies written under R645-301-524.430 and R645-301-525.490.) Address the effects of mining on snakes and other wildlife species (R645-301-332).

The PAP describes the potential effects of subsidence as escarpment failure and disruption of surface and ground water. The effects on the seeps found in the unnamed canyon in the southwestern corner of the permit area must be addressed. As a valuable wildlife resource, these seeps must be protected from loss (R645-301-332).

A standard stipulation on federal coal leases is that the lessees monitor the effects of underground mining on vegetation. The application includes a plan to monitor vegetation with color infrared photography every five years. This commitment is consistent with Division requirements for other mines and is acceptable.

Findings:

Information provided in the application is not considered adequate to meet the minimum Fish and Wildlife Information requirements of the regulations. Prior to approval, the Permittee must provide the following in accordance with:

R645-301-333, The PAP must include a quantitative water consumption impact assessment for the endangered fish of the Upper Colorado River Basin and methods of minimizing those effects.

R645-301-333, Address the potential for increased selenium and perhaps commit to monitor at the point of discharge into the Price River should waters ever reach that point.

R645-301-121.200, Remove the incorrect and contradictory statement “Considering the low population density and the abundance of suitable similar habitat this impact appears to be minuscule” (pg. 9).

R645-301-121.200, Clarify the inconsistency between the paragraph on page 9 and habitat representation on Plate 3-1.

R645-301-358.400; R521.141; R526.222, Protect the drainage immediately south of the disturbed area from construction. This drainage is used by wildlife as a transportation corridor. It is not obvious to the Division that the mine needs to disturb this area when there are islands of undisturbed areas on the pediment.

R645-301-332, The effects of subsidence on the seeps found in the unnamed canyon in the southwestern corner of the permit area must be addressed. As a valuable wildlife resource, these seeps must be protected from loss. Other effects of subsidence must also be discussed particularly in areas with less than 1000 feet of cover. The effects to snakes and other wildlife species must be addressed.

TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-230.

Analysis:

Removal and Storage

The Permittee has outlined a disturbed area boundary on Plate 5-2 and has shaded undisturbed areas within those areas on Plate 5-2. The PAP indicates in Section 232.100 that “surface disturbance may not be required on all of the acreage identified as the disturbed area.” The difference between the acreage falling within the disturbed area boundary (48 acres) and that to be disturbed (25 acres) is shown in the Available Soil Resources Table in Section 232.100. Since Regulation 645-301-232.100 requires topsoil removal from all disturbed areas, further explanation of the need to include 23 acres of undisturbed land within the disturbed area boundary has been requested.

For the purposes of removal, the PAP defines topsoil as all soil from the surface down to eighteen inches (Section 231.100). Plate 2-3 Soil Salvage and Replacement provides guidance for the topsoil removal. Plate 2-3 shows removal of eighteen inches of topsoil from the central and northwest portion of the disturbed area with twelve to eight inches being removed from the roadway and twelve to eighteen inches removed from the sediment pond location and eight to eighteen inches removed from beneath the coal stockpile and coal storage bin. A soil scientist will be on-site during topsoil removal (Section 231.100).

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The PAP describes topsoil removal in several sections in the plan as follows:

- The depth of “topsoil” removal will be eighteen inches “from those areas of the mine yard where material will be excavated in order to achieve final yard configuration, ” (Section 232.100).
- “The actual topsoil salvage will consist of removing a surface layer up to 18 inches thick over the disturbed area.” (Section 232.200)
- “Available underlying soils will be salvaged from stony disturbed areas” (Section 232.710).
- “If shale is encountered within 18 inches only the soil above the shale will be salvaged. (Plate 2-3).” (Section 232.100).

Soils will be removed from all disturbed areas to a depth of eighteen inches or to shale (Section 232.300) with the following exceptions:

- The steep rocky slopes within the disturbed area below and between the conveyor and coal storage pile (Section 232.710).
- The two bents to be constructed for the conveyor.
- The area of topsoil storage, except that topsoil will be removed from the access road to and around the topsoil pile, but not from beneath the topsoil pile (Section 232.100).
- From undisturbed islands within the disturbed area (Section 234.220).

The Permittee will install an enclosed conveyor (Section 232.710) in an attempt to keep the native soils (beneath the conveyor and in undisturbed islands) free of coal accumulations. Installation of jersey barriers will protect the slope from encroachment by the coal stockpile. A commitment to vacuum on either side of the conveyor a distance of twenty feet has been included in the event that coal fines are blown from the stockpile (Section 232.710).

Soils available for salvage are indicated in a table of Available Soil Resources in Section 232.100. The table indicates that 61,512 loose cubic yards of soil may be available for storage in the topsoil pile. The table divides salvageable soil by map unit type. Soils will be removed from the 25 acres to be disturbed with a crawler-tractor, grader, front-end loader, and/or trackhoe.

To protect the soil resource, the Permittee has committed to handling the soils at an optimum moisture content, when the soils are loose and friable (Section 231.200), adding moisture or allowing the soils to dry as needed.

The Permittee commits in Section 232.500 to maintaining records of materials removed and placement of materials either in the topsoil storage pile or in the fill. The Permittee also commits to having a certified soil scientist on site during construction and reclamation phases (Section 232.100). The soil scientist would log pedestal heights to verify soil removal depths

(Section 232.500). Further the PAP provides a commitment to develop As-Built maps showing where subsoil materials have been used as fill material (Section 232.500).

SUWA commented on the need for soil-borrow areas. Topsoil will be recovered from all disturbed areas (from a minimum depth of 6 inches from RBT soil up to 18 inches from VBJ, SBG and DSH soils). The total recovery of topsoil is estimated at 52,000 bank cubic yards. On the average, this represents a salvage depth of 15 inches over the 25 proposed disturbed acres. Furthermore, the Permittee indicates in the PAP (Section 233) that no substitute topsoil will be necessary based upon the Order 1 Soil Survey that indicates subsoils are also suitable for plant growth down to a depth of 48 inches. There is no need to develop a soil borrow area.

Storage of the approximately 60,000 loose cubic yards of topsoil will be in a stockpile with the approximate dimensions shown on Figure 1 of Chapter 2: 26 feet height, 246 feet length, 146 feet width (see also Section 232.100). Plate 5-7A-2 shows cross-sections of the proposed stockpile. At cross-section locations, the pile height is between six and twelve feet. **Plate 5-7A-2 refers to Plate 2-4 which does not exist.**

The topsoil stockpile is located on Plate 5-2 and Plate 5-7. Topsoil stockpile will be protected from upstream flow by drainage ditches. The surface of the stockpile will be pitted to retain moisture and reduce erosion (Section 231.100 and 231.400). The Division notes that this practice is described in the Practical Guide to Reclamation (DOGM, 2000), available at <http://dogm.nr.state.ut.us>. The topsoil will be retained in place with the use of berm/ditches or silt fences surrounding the pile. The stockpile will be mulched and seeded using the mix in Table 3-4, after September 15 (231.400).

Table 3-4 Interim and Final Reclamation Seed Mix includes Yellow Sweet Clover, Alfalfa and Forage Kochia at the request of the BLM, "based on their proven benefits to wildlife and domestic stock as well as their ability to provide erosion control and their widespread distribution as a result of previous seeding public lands." The Division has requested modification of the species mix in Table 3-4 under Operation Plan Vegetation (See deficiency written under R645-301-331). Species in the mix should be chosen to control erosion yet maintain the natural beauty of the landscape.

The Permittee has committed to gathering the surface four inches of soil and vegetation separately from the remainder of the topsoil salvage (Section 231.400). The surface soils will be applied to the surface of the topsoil pile after gouging. The surface layer of soil is valuable, for it contains seeds, cryptogam filaments, other microorganisms, organic matter, elevated levels of nitrogen and phosphorus. The biologic soil crusts established on the topsoil pile could be later harvested for inoculation of the reclaimed site.

The Division previously recommended that the topsoil pile receive an initial irrigation after the 2 – 4 inch surface layer is applied, to ensure good contact, based upon the paper: Jayne Belnap, "Crytobiotic Soil Crusts: Basis for Arid Land Restoration (Utah)," Restoration and

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Management Notes 12:1 Summer 1994. The Permittee has declined to irrigate. Since the research on this issue is limited, the Division will not press the issue, unless and until further evidence of the benefits of irrigation in establishing transplanted cryptogam filaments is published. The procedure that the Permittee has outlined for distribution of cryptogam filaments during final reclamation might be the best way of establishing the cryptogams on the topsoil pile as well. i.e. crushing and sieving the soil and cryptogam colonies and adding them to the hydrospray of mulch.

Storage of topsoil from the topsoil access road will be in berms around the topsoil stockpile (Section 232.100). Storage of topsoil from the fan portal will be in a berm around the fan disturbance (Section 234.100). Plate 5-2 shows the location of the topsoil berm at the fan site. To avoid contamination with rock dust, the berm will not extend in front of the fan. The bermed fan portal soil will be protected with a silt fence and vegetated (Section 234.100).

Subsoils

In Section 232.500, the PAP refers to a Salvageable Soils Map in Appendix A-2 that is incorporated into the PAP. Although not stated in the PAP, the Division understands that the referenced Map is part of the Order 1 Soil Survey and that it is located in Appendix A-2 of Appendix 2-3. The Permittee should make this correction page 13 of Chapter 2. This map recommends salvage of between six and 48 inches of topsoil and subsoil from the disturbed area.

The PAP states that subsoil from 12 – 30 inches from cut areas will be used as fill material during operations (Section 232.500). Subsoil will also be used as cover over the waste rock disposed of in the refuse area (pages 2-3, Appendix 5-7). Section 232.700 specifies the subsoil recovery for soil types SBG, DSH, and VBJ, based upon recommendations found in Part 3.4 of Appendix 2-3 Soil Inventory. The Division understands that the recovery depth in inches is the depth of salvageable subsoil remaining after topsoil removal. Thus, for SBG soil the 30 inch removal thickness would come from between 18 inches and 48 inches in the profile.

SUWA commented that a subsoil stockpile should be required. Adequate topsoil will be salvaged from the proposed disturbed area, but the location of subsoil used as fill material will be mapped for use during reclamation to extend rooting depth of the reclaimed site (Section 232.500 and Section 241). The subsoil from the cut areas will be replaced in its approximate original location. These subsoils will be used as fill underneath parking areas, roads, buildings, and storage sites. These subsoils will be protected during operations by asphalt, concrete, or gravel over an impervious membrane (Section 232.500). Contaminated subsoils will be hauled to a landfill site. (It is not clear to in the PAP what contaminants will be monitored and what monitoring will occur.)

Findings:

The Division will coordinate review of the species found in Table 3-4 with the BLM to obtain a species mix that can control erosion yet maintain the natural beauty of the landscape, an issue raised six times through public comment. Several areas of deficiency have been identified with the topsoil salvage and storage plans. Prior to approval and in accordance with:

R645-301-121-200, (1) Plate 5-7A-2 refers to Plate 2-4 which does not exist (2) Section 232.500, page 13 of Chapter 2, the Salvageable Soils Map in Appendix A-2 is more easily found if cited as Appendix A-2 of Appendix 2-3.

R645-301-553.252, The Permittee must explain what contaminants will be monitored in the stored subsoil and how the monitoring will take place.

R645-301-234.230, Application of cryptogams to the surface of the topsoil pile should include a test of the proposed method of application of cryptogams during final reclamation. i.e. crushing and sieving the soil and cryptogam colonies and adding them to the hydrospray of mulch.

VEGETATION

Regulatory Reference: R645-301-330, -301-331, -301-332.

Analysis:

All incidental disturbances will be revegetated with an interim seed mix. Table 3.4/3.5 is a seed mix that will be used for both interim and final revegetation. The mixture contains a high proportion of Blue flax, a aggressive self-seeding native species.

Section 331 refers to the revegetation plan in section 340 for further information about revegetation methods. The details of this plan are discussed under Revegetation in the Reclamation Plan.

Findings:

Information provided in the application is considered adequate to meet the minimum Vegetation section of the Operations regulations.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

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Analysis:

Road Classification System

Plate 5-2 shows the location of all roads that the Permittee will use for coal mining and reclamation activities within the disturbed Lila Canyon area. The roads within the disturbed area boundary include: the county road, the mine facilities road, the coal loadout road, and the portal access road. All of the roads in the disturbed Lila Canyon area that the Permittee will construct are classified as primary roads. The roads were classified as primary roads because they will be used to transport coal and/or will be used frequently for more than six months.

Plans and Drawings

Roads

The Permittee must give the Division adequate plans and drawings for each road that they will construct in the disturbed area. The Permittee has identified two roads they will construct in the disturbed area: the Mine Facility Road, and the Portal Access Road.

In section 527.200 of the PAP, the Permittee states that detailed designs and descriptions for each road are in Appendix 5-4, Appendix 7-4, and on Plate 5-2. On Plate 5-2 of the PAP, the Permittee shows the location of the Mine Facility Road. In Appendix 5-4, the Permittee states that the road will be gravel at first, but will be paved in the long term. The Mine Facility Road will be approximately 24' wide and will have drainage controls.

The only cross-section or other design drawing is Figure 1 in Appendix 5-4. That figure is not a detailed design, but rather a conceptual drawing. The Division found several problems including, but not limited to:

- 1) Figure 1 is not certified,
- 2) The designs in Figure 1 do not match the specifications in section 527.200 of the PAP (drawing shows 16' width and the text states that the road will be 24' wide),
- 3) The drawing is not to scale,
- 4) The Permittee must give separate designs and cross-sections for each road. The general design in Figure 1, Appendix 5-4 shows that a ditch will be on the out slope of each road. However, Figure 7-5 shows that sections of both the Mine Facility Road and the Portal Access Road do not have ditches. The Permittee must either have ditches for all roads or show that alternative methods are adequate to prevent erosion, and water pollution.

The Division believes that the designs for the portal access road are inadequate. The Permittee does not show a turnaround area, though they plan to transport underground

development waste from the rock slopes using the portal access road. Based on the size of the trucks, the Division believes that there is inadequate room at the portal face up area for the trucks to be loaded and turn around. Since the Permittee will need to haul coal mine waste (rock slope material) from the portals to the refuse pile, large trucks will be using that road during initial construction.

Measures to be Taken to Obtain Division Approval for Alteration or Relocation of Natural Drainage

The Permittee does not propose to alter or relocate any natural drainage. The Permittee does propose to construct the Main Facility Road within 10 feet of the Right Fork of Lila Wash. Because of the close location to the drainage, the Division will require the Permittee to supply detailed drawings and cross-sections that show how the Permittee will protect the undisturbed drainage.

Location of Roads in Intermittent or Perennial Streams a Ford

The Permittee does not propose to locate a road in the channel of an intermittent or perennial stream, locate a temporary ford in the channel of an intermittent or perennial stream, or install a low-water crossing of a perennial or intermittent stream channel.

Drawings and Specifications for each Low-Water Crossing of Perennial or Intermittent Stream Channels so that The Division Can Maximize the Protection of the Stream

The Permittee plans no low-water crossings.

Plans to Remove and Reclaim Each Road that would not be Retained Under an Approved Postmining Land Use, and the Schedule for this Removal and Reclamation.

The Permittee states in Section 542.600 that there will be no roads left within the disturbed area after final reclamation. The Permittee will reclaim all roads upon cessation of mining.

Performance Standards

The Permittee must ensure that each ancillary and primary road will meet the performance standards outlined above in the Minimum Regulatory Requirements for Road Systems and Other Transportation Facilities.

In meeting regulatory requirements, the Permittee has provided the following information:

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- Appendix 5-5 has information about slope stability for the roads. The Permittee states that they performed a slope stability analysis for the road embankment and road cut slope. The stability analysis is in Appendix 5-5.

Portal Access Road: The Permittee shows the road on Plate 5-2. It will provide access from the bathhouse area to the rock slope portals. The road is a 1,600 feet long with a maximum grade of 12.5%. The cut slopes will be no steeper than 1H:1V with a maximum height of 23 feet. Fill slopes will not be steeper than 2H:1V with a maximum height of 50 feet. The Permittee states that cross sections for the road are on Figure 6, Appendix 5-5. However, there is no such figure. Nor does the Permittee give the needed safety factor information.

The road embankment will have a safety factor of 2.48 under dry conditions and 1.58 for saturated conditions. The road cut slopes will have a safety factor of 1.85 under dry conditions and 1.31 under saturated conditions. The minimum safety factor required for those slopes is 1.30. Thus, the slopes meet or exceed the safety factors of the Utah Coal Rules.

Main Mine Road: The Permittee does not discuss the Main Mine Road in the stability analysis.

- The Permittee did additional stability analysis using STABLE, a slope stability program. The Permittee analyzed several road embankment and cut-slope configurations in the disturbed area. Each cut slope exceeded the minimum safety-factor requirement of 1.3. The Permittee does not include printouts of the analysis. The Division needs that information to verify the input and output conditions.
- Primary roads have been located in the pad area. The Permittee has designed the pad area to minimize erosion, insofar as is practicable. In addition, the roads are located on stable surfaces.
- The Permittee does not propose to have any temporary fords in perennial or intermittent streams.
- The primary roads will have adequate drainage controls.
- The road base shown for the primary roads in Figure 1 of Appendix 5-4 will be 6-inch road base gravel. Other mines have used that type of material and the Division considers it adequate.

Primary Road Certification

The road plans and cross-sections are located in Appendix 5-5 and on Plate 5-2. A registered professional engineer certified the plans.

A qualified registered professional engineer shall also certify the actual construction or reconstruction of primary roads in a report to the Division. The Permittee must provide those reports, called as-builts, to the Division upon completion of the road.

Other Transportation Facilities

In section 520 of the PAP and on Plate 5-8, the Permittee describes and shows the conveyors that will be used at the Lila Canyon facility. The main conveyor will transport coal to the surface. The main conveyor belt is 60 inches wide, extends 320 feet from the portal, and has a belt speed of 700 feet per minute. Since the Permittee plans to leave the ground beneath the conveyor as undisturbed due to the steepness and remoteness of the area, the Permittee will totally enclose the conveyor.

The coal will move from the main conveyor to the stacking tube. From there, the coal will feed into a reclaim tunnel and load onto the reclaim tunnel conveyor (48 inches wide and 280 feet long, covered where above ground). Next, the coal will go to the crusher.

From the crusher the loadout conveyor will transport the coal to the loadout bin. The loadout conveyor is 48 inches wide, 210 feet long and has a belt speed of 500 feet per minute. The Permittee will cover the above-ground portion of the conveyor.

From the loadout bin, the truck conveyor will transport the coal to coal trucks for over-the-road transport. The truck conveyor is 48 inches wide, 50 feet long and the Permittee will cover all above-ground sections.

On Plate 4-4, the Permittee labeled a county road as a proposed coal haul road. While the Permittee will be using the proposed county road to transport coal from the mine to State Highway 6, that road is a public road and not a road owned or controlled by the mine. The Division has made a separate finding on the disposition of this road and has determined that it should not be permitted. The activities proposed for this road are commensurate with activities allowed on public roads of this designation. The Permittee does not propose to utilize this road for coal mining and reclamation operations; transportation of coal is not considered coal mining and reclamation operations. To avoid confusion the Permittee must label the proposed coal haul road as a county road.

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Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-527.230, The Permittee must show that trucks and other vehicles they will use during the construction, use, and reclamation of the portal will have enough room to turn around and be loaded, or they must modify the portal access road design.

R645-301-527.210, The Permittee must give the Division detailed designs for each road that will be constructed in the disturbed area. A general commitment to provide the Division with additional engineering designs is inadequate. If the Permittee needs more time to develop road designs then they should wait until the designs are complete before submitting the PAP. At a minimum, the Permittee must give the Division detailed designs for both the Main Mine Road, and the Portal Access Road. The information in the text and that in Appendix 5-4 are contradictory. See analysis section for details.

R645-301-527.210, R645-301-527.220 and R645-301-527.230, The Permittee needs to give the Division detailed maps and cross-sections that show how the South Fork of the Lila Wash will be protected from mining activities, especially from the Main Facility Road, which is located 10 feet from the drainage.

R645-301-527.210 and R645-301-121.200, The Permittee must either include Figure 6 in Appendix 5-4 or remove reference to that figure.

R645-301-534.130, The Permittee must include a safety factor analysis for all the roads in the disturbed area or show why they are not needed. The Permittee must also include summary sheets from the computer printouts.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes

Noncoal waste can be classified as non-hazardous or hazardous and include recyclable materials, asphalt and concrete. Non-hazardous waste consists of garbage and will be placed in dumpsters. The non-hazardous waste will then be shipped to a state licensed disposal site, most likely East Carbon Development Corporation (ECDC.) Hazardous waste, as defined by Resource Conservation and Recovery Act (RCRA), will be sent to a state licensed disposal site - most likely ECDC. See Section 528.224 of the PAP for more details about hazardous waste disposal. Scrap material and used machinery is usually sent to a scrap dealer or a recycling center for disposal.

The Division will allow the Permittee to dispose of concrete debris on site. The on site disposal of concrete will be done by placing the concrete in areas that will be backfilled and graded, as shown on Plate 5-6.

The PAP indicates in Section 542.640 that a minimum of two feet of cover will be placed over sand and gravel road surfacing materials and asphalt will be disposed off-site. Concrete will be buried by four feet of cover (Section 542.741).

Coal Mine Waste

Appendix 5.7 describes 25,000 loose cubic yards of underground development waste generated from portal development. Additional refuse will come from the operation of the screening plant and the mine itself. Appendix 5.7 indicates that there is room at the refuse disposal facility for storage of an additional 19,500 cu yards of mine waste.

In section 528.320 of the PAP, the Permittee states that coal mine waste will consist of: coal processing waste, and underground development waste. The underground development waste consists of three subcategories: rock slope material, underground development waste that contains coal, and reject material from the coal crushing operation. The location of the coal mine waste storage facilities (refuse pile) is shown on many maps and cross sections including: Map 5-2, Surface Area; Figure 1, Appendix 5-7; and Figure 2, Appendix 5-7. The location of the coal mine waste is shown as "hatched marked" on the cross-sections and labeled.

The Permittee will construct the coal mine waste disposal site (refuse pile) as follows:

- **Ground Preparation:** The Permittee will remove vegetation and topsoil from the site and store it in the designated topsoil piles. Next, they will remove the subsoil as shown on

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Figure 1 in Appendix 5-8 and fill the cell that is created with coal mine waste. The Permittee plans to construct several such cells.

- **Placement of Coal Mine Waste (Refuse):** The Permittee states in Appendix 5-7 that coal mine waste will be placed into the cells. The Permittee will construct the section of the refuse pile that contains only structural fill by placing the material in the cell, compacting it and then covering the area with four feet of non acid-, non toxic-forming material.
- **Coal Processing Waste Testing:** The Permittee will test the material from the rock slopes during the initial startup and at the $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ mark and at the end of the project. Material from the crusher or coal sections of the mine will be tested every 6,000 tons.
- **Spreading and Compaction:** The Permittee states that compaction will take place using a wheeled loader during the filling operation. They will place the material in lifts with a maximum thickness of 12 inches.
- **Drainage:** The Permittee will grade the subsoil to allow proper drainage and to prevent the impoundment of water.

The main design criterion for coal mine waste disposal areas are as follows:

The coal mine waste must be disposed of in a way that minimizes the adverse effects of leachate and surface-water runoff on surface and ground water quality and quantity. The Division does not anticipate that the Permittee will encounter significant amounts of acid or toxic-forming material. If the Permittee does encounter significant amounts of acid or toxic-forming materials, the 4 feet of material placed over the coal mine waste will limit any leachate from coming in contact with surface water. There are no water resources underneath the coal mine waste. Therefore, groundwater resources will not be damaged from leachate from the coal mine waste disposal site.

The Permittee must construct the coal mine waste disposal facility (refuse pile) to ensure mass stability and prevent mass movement during and after construction. The coal mine waste disposal facility has a static safety factor of 16.19. The minimum required static safety factor is 1.5. The Permittee based the stability calculations on cross section 8+00 (Figures 1 and 2, Appendix 5-7).

After final grading, the Permittee will cover the coal mine waste disposal area (refuse pile) with 4 feet of non acid-, non toxic-forming material. The 4-foot cover will be adequate to protect vegetation from any acid or toxic materials.

The coal mine waste storage facility will be located within the disturbed area of the Lila Canyon Extension. Access to the site will be restricted to mine personnel during normal mining operations. In the event of the mine going into temporary cessation the cover, and cell construction methods will protect the public from hazards associated with the site.

The Permittee does not anticipate that any coal mine waste will be disposed of outside the permit area, nor do they anticipate placing coal mine waste from another operation in the Horse Canyon Permit area. If the need arises, the Permittee must modify the MRP.

A registered professional engineer (P.E.) designed the coal mine waste disposal facility. The Division will require P.E. certified as-built drawings after when the Permittee finishes construction of the site.

The Permittee has committed to notify the Division in the event of a potential hazard at the coal mine waste disposal site. See the section on slides and other damage in this TA for details on how the Permittee will handle emergencies.

In Appendix 5-7, the Permittee estimates that there will be 25,000 loose cubic yards of underground development waste generated from portal construction. The Permittee expects an insignificant amount of additional refuse to come from the operation of the screening plant and the mine itself. Appendix 5-7 indicates that there is room at the refuse disposal facility for storage of an additional 19,500 cu yards of mine waste.

Refuse Piles

The Coal Mine Rules' definition of terms are found in R645-100-200 as follows:

- A refuse pile is a surface deposit of coal mine waste that does not impound water.
- Coal mine waste means coal processing waste and underground development waste.
- Coal processing waste means earth materials that are separated from the product coal during cleaning, concentrating, or the processing or preparation of coal.
- Underground development waste means waste-rock mixtures of coal, shale, claystone, siltstone, sandstone, limestone, or related materials that are excavated, moved, and disposed of from underground workings in connection with underground coal mining and reclamation activities.

Coal processing waste will be limited to materials from the crusher. The Permittee will not dispose of material separated from the coal during the crushing process underground. The coal processing waste will be disposed of in the refuse pile shown on Plate 5-2 and described in Appendix 5-7.

The Permittee plans to generate 16,650 bank cubic yards of material during the construction of the rock slopes that lead from the surface facilities area to the coal seam. The Permittee assumes that the loose material will take up 1.3 times the in-place volume. Therefore, a disposal site with the capacity for approximately 25,000 cubic yards of coal mine waste is necessary. Because the material from the rock slopes is not expected to contain coal or acid- or toxic- forming materials, the Permittee proposes to use the 25,000 cubic yards of material for structural fill.

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The Permittee will not use refuse material from the crushing process or from material taken from within the section of the mine that has coal as structural fill. To distinguish the two types of refuse, the Permittee refers to one as rock slope material. See Section 536.300 in the PAP for details.

The Utah coal rules do not have any specific requirements for the use of refuse as structural fill. The rules do specifically state that refuse can be used for structural backfill in underground mines (R645-301-536.700) and to construct dams and embankments (R645-301-536.800.) The Utah coal rules (R645-301-536.900) also state that refuse piles must meet the requirements of 30 CFR 77.214 and 30 CFR 77.215:

The Permittee shows the location of the refuse pile on Plate 5-2. The Permittee labeled the material from the rock slopes that they will use for structural fill, and marked it differently than the coal processing waste. In Appendix 5-7, the Permittee states that they will place 25,000 cubic yards of rock slope material in the refuse pile as structural fill and that up to 19,473 cubic yards of coal processing waste can be disposed of in the refuse pile. Section 520 (Refuse Piles) gives the refuse- pile capacity as 150,000 tons. Numbers used for rock density and swell factor can affect the conversion to cubic yards, but this number seems to indicate roughly 50% more material than the refuse pile design in App. 5-7.

To avoid confusion, the Division will require the Permittee to list separately the amounts of rock slope material, and coal processing waste material in Table 1, Appendix 5-7.

Appendix 5-7 contains detailed information on the construction of the refuse pile/coal mine waste disposal facility. Figure 1, Appendix 5-7 shows the location of the refuse pile and the division between the rock slope material and coal waste in plan view. The profiles show the pre-mining, operational, and reclaimed stages of the refuse pile. Figure 2, Appendix 5-7 shows the cross-sections for the refuse pile.

The profiles and cross-sections show how the Permittee will construct the refuse pile. The Permittee will salvage the top 18 inches of pre-disturbed ground as topsoil, then remove the subsoil.

On Figure 1, Appendix 5-7, the Permittee shows that they will place coal mine waste in the refuse pile. However, on Figure 2, Appendix 5-7, the Permittee shows that they will place slope rock material in the entire refuse pile. Because the Permittee will handle the rock slope material differently than the material with coal, the Permittee must distinguish between the two types of materials in the cross-sections and profiles.

On Figure 2, Appendix 5-7, the Permittee shows that they will cover the slope rock (coal mine waste) with 18 inches of topsoil and 30 inches of fill material, totaling 48 inches of cover.

However, R645-301-553.252 requires that all refuse piles be covered with a minimum of 4 feet of cover unless otherwise approved by the Division.

The Permittee has estimated the amount of rock slope material to be 25,000 loose cubic yards. Section 536.300 states there is unlikely to be any coal in the slope rock material, but Section 537.200 discusses treatment of slope rock material containing coal. This is not necessarily contradictory, but it is confusing. The Division has requested further information on the separation of coal containing waste from the structural fill.

Section 528.320 distinguishes the coal-free coal mine waste, which the Permittee will use as structural fill, from the material that will go into an apparently separate refuse pile. However, the PAP makes it clear that these two areas are adjacent and conjoining and will be treated as one area or structure, especially during reclamation.

Figure 1, Appendix 5-7 shows that the Permittee will divide the refuse pile into two sections. The western section will be rock slope material, used to create a structural fill. The eastern section has the capacity for 19,437 cubic yards of coal mine waste (see Appendix 5-7).

The Permittee outlines the testing of coal mine waste in Appendix 5-7. The Permittee will test all rock slope material five times. The Permittee will only use rock slope material as structural fill. The testing will take place during the initial start up, at the $\frac{1}{4}$ mark, the $\frac{1}{2}$ mark, and the $\frac{3}{4}$ mark and near completion. The Permittee will test other coal mine waste, generated during operations from the crusher and underground development, containing coal every 6,000 cubic yards.

The Permittee will treat and dispose of all coal mine waste as if the material were acid- or toxic-forming. All coal mine waste will be disposed of under four feet of material.

Impounding Structures

The Permittee will not construct any impoundments from coal mine waste. The only impoundment structure at the Lila Canyon site is the incised sediment pond.

Burning And Burned Waste Utilization

Appendix 5-3 Coal Mine Waste Fire Extinguishing Plan calls for smothering potential fires with borrowed soil material. The source of the borrowed soil is not determined, but implies an off-site source. On-site subsoils are already committed for use as final reclamation cover over the mine waste. On-site subsoil cover may not be used for fire suppression.

Return of Coal Processing Waste to Abandoned Underground Workings

The Permittee does not propose to dispose of coal mine waste underground.

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Excess Spoil:

The Permittee does not anticipate the generation of any excess spoil.

Findings:

The information provided does not meet the minimum acceptable requirements of the Regulations. Prior to approval and in accordance with:

R645-301-521.124, The Permittee must show the location of the structural fill and refuse disposal areas on the cross sections on Figure 1 Appendix 5-7.

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

Analysis:

General

The Permittee has based the ground water and surface water monitoring plans on the PHC determination and the analysis of baseline hydrologic, geologic, and other information in the proposed amendment. The Permittee will monitor the surface- and ground- water monitoring sites quarterly through the operational and reclamation periods to document any diminution or damage to the hydrologic balance. The Permittee will analyze water samples from seeps, springs, and streams for the parameters listed in Tables 7-4 and 7-5. The parameters in Tables 7-4 and 7-5 match the operational parameters in the Division's Directive Tech 004. The Permittee will submit monitoring reports to the Division at least every three months, within 30 days following the end of each quarter (Section 731.212).

The proposed Lila Canyon Extension includes a commitment to analyze ground- and surface-water samples for baseline parameters preceding each 5-year permit renewal (Section 731.200). These permit-renewal baseline analyses will be done for the surface-water samples collected at either high or low flow and for the spring samples collected at low flow during that year.

The Permittee's water-monitoring plan is intended to provide data to show impacts to potentially affected springs, seeps, impoundments and drainages within and adjacent to the permit area by comparison with relevant baseline data and with applicable effluent limitations. The Permittee has selected monitoring locations and frequencies, described in Table 7-3, so that

significant springs, seeps, impoundments and drainages that could potentially be impacted by the mining and reclamation operations will be monitored on a regular basis (Section 731.222.1).

Groundwater Monitoring

Section 731.211 discusses the ground-water monitoring plan. It makes reference to water rights on several of the springs to be monitored. Section 731.212 states that when analyses of ground water indicate non-compliance with permit conditions, the operator will promptly notify the Division and take the actions provided for in (R645-300-)145 and (R645-301-)731:

- Minimizing surface disturbance and proper handling of earth materials to minimize acidic, toxic or other harmful infiltration to ground-water systems;
- Testing (as-necessary) to ensure stockpiled materials are non-acid and non-toxic;
- Controlling and treating disturbed area runoff to prevent discharge of pollutants into ground-water, by the use of diversions, culverts, silt fences, sediment ponds and by chemical treatment if necessary
- Minimizing and/or treating mine water discharge to comply with U .P.D.E .S . discharge standards;
- Establishing where ground-water resources exist within or adjacent to the permit area through a Baseline Study (done) and monitoring quality and quantity of significant sources through implemtation of a Water Monitoring Plan (proposed);
- Proper handling of potentially harmful materials (such as fuels, grease, oil, etc.) in accordance with an approved Spill Prevention Control and Countermeasure Plan (SPCC).

It states in Section 731.211 that there is a total of 17 ground water monitoring sites proposed for this property, and refers to Table 7-3. Including mine-water discharge at L-5-G and the IPA piezometers, Table 7-3 shows only 13 ground-water monitoring sites. This needs to be clarified.

No ground-water system underlies the planned surface facilities, which are to be built on fill placed on Mancos Shale, a shale formation several hundred feet thick that greatly restricts vertical and horizontal movement of water (Section 724.100). All potential acid and toxic material will be disposed of in a confined, stable area and covered with at least 4 feet of soil. Contamination of perched ground water in the Price River and Colton Formations is unlikely because the perched zones are several hundred feet above the Lower Sunnyside Coal Seam, and low-permeability strata separate the perched ground-water zones from the coal seam. The perched ground water will not be intercepted by mining activities

SUWA has raised concerns that the number of seeps and springs being monitored is not sufficient, that most of them are outside the permit, and that one spring in the permit area is not sufficient. Determination of the permit area is not based on hydrologic systems. The Coal Mining Rules require protection of resources both within and outside the permit area and

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baseline and operational monitoring of both the permit area and adjacent areas. The Division notes that expanding the permit area to include more springs would actually lower the performance standard for protection of the added springs from; “minimize impact” and “prevent material damage”, to simply “minimize impact”.

The seeps and springs selected by the Permittee for monitoring are representative of the springs and seeps in the ground-water emergence zones located over or adjacent to the area of proposed mining. Additional, detailed investigation of every aspect of every component of the hydrologic resources is not needed to monitor the resources and minimize impacts, or to comply with the Coal Mining Rules. Springs initially selected typically have baseline water-quantity and -quality data from the EarthFax survey, have been developed for use by the water right holder, and have the greatest or most consistent flow of the group or zone. As the mine plan has developed, springs have been added or removed to optimize the effectiveness of monitoring.

Monitoring was resumed at spring locations L-6-G through L-10-G in 2001 to establish a continuous record from pre-mining into operational conditions. Baseline monitoring for L-11-G and L-12-G was initiated in October 2001. L-11-G has replaced L-6-G, which was dropped from the plan in 2003. Seeps in Stinky Spring Canyon at the southwest corner of the Lila Canyon Extension area were added to the monitoring plan in 2002 (L-16-G and L-17-G). Monitoring of L-10-G ceased in the first quarter of 2003 because it was considered too far outside the permit area to be of any benefit.

Sites L-5-G, L-7-G, L-8-G, L-9-G, L-11-G, and L-12-G, and IPA-1, -2, and -3 are the sites currently proposed for ground-water monitoring. These are described in Section 731.211 and listed in Table 7-3. Locations are shown on Plate 7-4. Data collected up through October 2002 are in Appendix 7-1. Seeps and springs will be monitored quarterly for parameters listed in Table 7-5. Station L-5-G is the potential mine discharge point and will be monitored in accordance with UPDES Permit requirements. IPA-1, -2, and -3 will be monitored quarterly for depth.

L-7-G, L-8-G, L-9-G (Pine Spring), and L-10-G (William's Draw Spring), correspond with the springs monitored by EarthFax as 9, 10, 16(Z), and 14, respectively. L-12-G corresponds roughly with EarthFax springs 11 and 12, but does not coincide exactly with either one. Appendices 7-1 and 7-6 of the Lila Canyon Significant Revision contain water-quality data on springs 9, 10, 14, and 16(Z) from 1993, 1994, and 1995, when they were monitored for baseline for the South Lease by IPA. There are field data on springs 11 and 12 but no water-quality analyses were done.

L-6-G is in the vicinity of Mont Spring, water right 91-617, and Leslie Spring, water right 91-618. These water rights correspond closely to JBR sample sites H-21 and H-19 and are near H-20, H-21A, H-21B, and H-22; H-18 was selected by the Permittee as L-6-G to monitor ground water in this area because it is the lowest spring in the stratigraphic sequence. However, this spring has been dry during recent monitoring, so L-11-G – located approximately 100 yards

upstream - has been added to the monitoring plan to replace L-6-G. Spring L-11-G corresponds with springs H-18A and H-18B. There are no data in the PAP on H-18A and H-18B, but from Plate 7-1, these appear to be the same alluvial water system that was monitored at H-18 (L-6-G).

The spring to be monitored by the Permittee as L-7-G was monitored as 9 (S-9) from 1993 to 1995. Spring 9 is near springs 8, 19-A, and 19-B and has had the most consistent flow of the group. Baseline data for Spring 9 are in Appendices 7-1 and 7-6. Monitoring resumed in July 2000. The Permittee identifies Spring 9 as Cottonwood Spring, which is associated with water right 91-2521 in Table 7-2; however, the location described for water right 91-2521 in Table 7-2 (NE/4 Sec. 13, T. 16 S., R. 14 E.) is evidently very general: the designated quarter-section is on a topographic high and there are no identified springs at that location. Water rights 91-399 and 91-2537 are closer to springs 8, 9, 19-A, and 19-B.

A water-monitoring program was implemented in July 2000 to determine if the springs proposed for operational monitoring were still viable and to establish a current baseline that would be continuous with operational monitoring, and additional sites were added in 2001 and 2002. Data collected through October 2002 are in Appendix 7-1.

Baseline water levels for 1994, 1995, and 1996 have been established at three points: IPA-1, IPA2, and IPA3. The PAP contains a commitment to monitor these three piezometers quarterly for water levels. In December 2000, UEI was able to measure the water level in IPA-2, but at IPA-1 and IPA-3 the probe was not able to go far enough into the piezometers to reach water. Water monitoring reports indicate the piezometers were not accessible in February 2001. All three piezometers were successfully measured by UEI on May 15, 2001 and each quarter since. The information is reported in Appendix 7-1.

Map 7-1, based on data from several sources, shows potential ground-water levels and where the Permittee anticipates the mine workings will intercept ground water. The amount of ground water that will actually enter the mine workings depends on the storage capacity of the surrounding formation, the permeability, and type of structure at the mining face. If mine water interception occurs, the water will be stored in sumps and used in the mine and, if necessary, discharged from the mine. Eventually, the three IPA piezometers may be intercepted by the mine, so in addition to the three piezometers, the Permittee commits in Section 731.513 to the monitoring of underground usage and discharge to more accurately define potential impacts on ground water.

Ground water will be monitored and data will be submitted at least every three months for each monitoring location. Monitoring submittals will include analytical results from each sample taken during the approved reporting period. When the analysis of any ground-water sample indicates noncompliance with the permit conditions, then the operator will promptly notify the Division and immediately take the actions provided for in 145 and 731 (Section 731.212). Ground-water monitoring will continue through mining and reclamation until bond release (Section 731.214).

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Equipment, structures and other devices used in conjunction with monitoring the quality of ground water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator and when no longer needed (Section 731.215).

Surface Water Monitoring

Drainage from disturbed areas will likely show increased sediment loading and poorer water quality than pre-mining runoff. The Permittee plans to mitigate discharges of disturbed runoff by constructing diversion ditches, culverts, berms, a sedimentation pond and other siltation structures. The Permittee discusses mitigation for disturbed area drainage beginning on, Chapter 7.

Surface water monitoring is presented in, Chapter 7. The Permittee proposes to monitor the significant surface water sources. Seeps, springs are treated as groundwater discharge sources for this application. Mine water discharge will be monitored under the UPDES program.

Surface water monitoring parameters are listed in Table 7-4.

Section 731.222 discusses the surface-water monitoring plan. The monitoring data will be used to determine the impacts of mining on the hydrologic balance by comparison with relevant baseline data and applicable effluent limitations.

Sediment pond and mine discharges will be monitored monthly or as frequently as discharges occur (Table 7-3). Appendix 7-5 contains a copy of the UPDES permit for the Lila Canyon Extension. The UPDES permit was issued in 1999.

Drainages in the area flow in response to snowmelt and precipitation events. The proposed surface-water monitoring program will monitor the Lila Canyon drainage both above and below the disturbed mine site area at L-1-S, L-2-S, and L-3-S and the sediment pond discharge at L-4-S.

L-1-S, L-2-S, L-3-S, and L-4-S have been monitored monthly since July 2000, and a summary of field observations through October 2002 is in Appendix 7-1. Most reports are "no flow". "No access" is frequently reported December through February. Once the mine begins operation, all sites will be more accessible. In any quarter, a minimum of three attempts will be made to access water monitoring sites, using either 4-wheel drive vehicles or ATVs, before reporting "No access"; however, safety and common sense will prevail while making such attempts (Section 731.220).

Locations of all monitoring sites are shown on Plate 7-4, "Water Monitoring Location Map." Proposed monitoring methods, parameters and frequencies are described in Table 7-3, "Water Monitoring Stations," and Table 7-4, "Water Monitoring Parameters." Monitoring reports will be submitted to the Division at least every 3 months, within 30 days following the

end of each quarter. The operational water-monitoring plan will be implemented upon approval of the MRP.

The proposed surface-water monitoring plan is detailed in Section 731.220. This plan is based on PHC determination and analysis of all baseline hydrologic, geologic and other information in this permit application. The plan provides for monitoring of parameters that relate to the suitability of the surface water for current and approved postmining land uses and to the objectives for protection of the hydrologic balance as set forth in R645-301- 751 (see Table 7-4).

The BLM originally proposed that the Permittee develop a water-monitoring plan for Range Creek, a perennial stream several miles northwest of the mine, to assess any potential impacts from mining to the perennial stream. The BLM later determined that Range Creek was separated from the mine by several miles, that impacts from mining activities were unlikely, and that it did not have to be monitored for impacts. The Division concurs with the BLM. No monitoring plan has been proposed by the operator for Range Creek. However, in response to comments received from SUWA, the PHC has been expanded to include Range Creek. There are no indications from the PHC that adverse effects might occur to Range Creek or the Range Creek drainage.

Discharges of water from this operation will be made in compliance with all Utah and federal water quality laws and regulations and with effluent limitations for coal mining promulgated by the Environmental Protection Agency (EPA) set forth in 40 CFR Part 434 (see Sections 731 and 742).

Monitoring reports will be submitted to the Division at least every 3 months, within 30 days following the end of each quarter (Section 731.220). Surface-water monitoring will continue through mining and reclamation until bond release (Section 731.224).

Equipment, structures and other devices used in conjunction with monitoring the quality and quantity of surface water on-site and off-site will be properly installed, maintained and operated and will be removed by the operator when no longer needed (Section 731.225).

Acid- and Toxic-Forming Materials and Underground Development Waste

The Permittee has committed to periodic sampling of the materials to be placed in the refuse pile; samples will be collected and analyzed five times during construction of the rock-slope tunnels and from every 6,000 tons of waste rock placed on the refuse pile during mine operation: parameters are in Table 2 of Appendix 5-7. The reclamation plan specifies 4 feet of subsoil and topsoil will be placed over the refuse pile. The slope-rock underground development waste used to build the pads will be left in place for final reclamation and buried with 4 feet of subsoil and topsoil (Chapters 2, 5, and 7, and Appendix 5-7).

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The Division requires that the slope-rock underground development waste be disposed of in a refuse pile. At a minimum, the material in the refuse pile must be covered with 4 feet of non-acid and non-toxic forming material. (See Chapters 2, 5, and 7, and Appendix 5-7 for details.)

Coal Mine Waste

Access to the underground workings of the Lila Canyon Extension will be provided by two rock slopes driven upward from the base of the Book Cliffs to the coal seam. Rock that will be removed from the tunnels will be called " rock-slope material/ mine development waste ", and it fits most closely into the classification of underground development waste. Rock-slope material/ mine development waste will contain mostly shale, sandstone, and mudstone. Traces of coal may be found. Rock-slope material/ mine development waste will be used to fill in some low areas to be used as pads (Section 537.200).

Some statements in the PAP could be more precise in their language and can seem contradictory and confusing if read outside the context of the entire PAP. For example, it can be inferred from Section 537.200 that some waste might be placed outside the designated refuse pile in indeterminate, undesigned "low areas"; from Section 537.250 that slope rock material might be used in pads other than the shop-warehouse pad, then left there and reclaimed "in place"; and from Section 537.240 that there might be more than one waste pile. In spite of such unfocused language regarding some details, the overall plan for handling, storage and disposal of coal mine waste and reclamation of the refuse pile is sufficiently clear and meets the requirements of the Coal Mining Rules.

To ensure surface and ground waters will not be polluted by acid or toxic materials, the underground development waste (slope-rock material) will be examined and tested as necessary to determine acid- and toxic-forming potential (Section 536 of the plan). In Appendix 5-7, the Permittee commits to take a sample of coal processing waste for every 6,000 tons of waste disposed of in the refuse pile. These samples will be analyzed according to the parameters listed in Table 2 of Appendix 5-7. The Division requires that the underground development waste be disposed of in a refuse pile. At a minimum, the material in the refuse pile must be covered with 4 feet of non-acid and non-toxic forming material. (See Chapters 2, 5, and 7, and Appendix 5-7 for details.)

Coal processing waste from the crusher will be placed in the refuse pile within the permit area. The refuse pile has been designed as a location for the storage of underground development waste that is brought to the surface, including any excess slope-rock underground development waste not used as fill; it is not anticipated by the Permittee that any underground waste other than the slope-rock will be brought to the surface. The capacity of the pile is designed for 150,000 tons, which is in excess of projected needs. Material not transported to the surface, such as overcast material, rock falls, and slope material may be disposed of underground

according to the appropriate MSHA regulations. Because this will be an underground mine there will be no spoil.

Discharges Into An Underground Mine

There are no plans to discharge any water into an underground mine.

Gravity Discharges From Underground Mines

There should be no gravity discharges from the mine, since all formations (strata) dip eastward and the identified potentiometric surface identified in the piezometers lies well below the level of the mine portal.

The proposed access portals are below the coal outcrop, as shown on Plates 5-2 and 7-5. The fan is to be located above the outcrop. The two 1,227-foot access tunnels will slope up at approximately 12 percent, from a starting elevation at the surface of approximately 6,150 feet. The intersection of the coal seam and the rock slope will take place at approximately 6,300 feet elevation. Maximum ground-water elevation measured in the three IPA piezometers is 5,975 feet, and maximum projected elevation in the vicinity of the rock-slope tunnels is approximately 6,000 feet (Plate 7-1). Ground-water levels would need to rise approximately 150 feet just to reach the starting elevation of the tunnels at the base of the Book Cliffs (6,150 feet) and approximately 300 feet to reach the intersection of the tunnels with the coal seam (6,300 feet), so it is unlikely water levels will ever reach the intersection of the tunnel and coal seam. It is also unlikely the rock slopes will intercept ground water in the Blackhawk Formation. Therefore, gravity discharge from the mine is unlikely.

Water-Quality Standards And Effluent Limitations

The application indicates that the only discharges from the site would be planned and consists of discharge water from the sediment pond or underground mine workings after treatment. Mine water will be treated prior to being discharged by use of sumps. The sumps would remove sediments and oil/grease from the water.

The Permittee states on Page 49 that if it became necessary to discharge mine water, the mine water would meet UPDES Permit requirements as identified in Appendix 7-5. The information in Appendix 7-5

Water monitoring parameters are shown in Table 7-4. Water monitoring locations and sample frequencies are described in Table 7-3 and on Plate 7-4.

The surface-water monitoring point-source discharge will be conducted in accordance with 40 CFR Parts 122 and 123, R645-301-751 and as required by the Utah Division of Water

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Quality (UDWQ) for UPDES permits. A UPDES discharge permit has been issued by the UDWQ for the proposed sediment pond and mine water for the Lila Canyon operation.

As indicated in Section 731.220, surface-water monitoring data will be submitted to the Division at least every three months. Discharge monitoring reports will be submitted to UDWQ monthly. When analysis of any surface-water sample indicates non-compliance with the permit conditions, the Permittee will promptly notify the Division and immediately take action to identify the source of the problem, correct the problem and, if necessary, to provide warning to any person whose health and safety is in imminent danger due to the non-compliance.

Casing and sealing of wells

IPA-1, -2, and -3 will be reclaimed according to the performance standards of the Coal Mining Rules. If any wells are installed in the future, the requirements of R645-301-765 will be met (Section 765).

Diversions: General

Plate 7-2 identifies all of the undisturbed and disturbed area diversion ditches. All disturbed area drainage will be diverted to the sedimentation pond, Plate 7-6. The undisturbed areas, UA-2, UA-3, UA-4 and UA-6 will also be directed to the sedimentation pond Table 5, Appendix 7-4. It was pointed out to Jay Marshall that UA-4 could be diverted to the channel above the proposed sedimentation pond. He stated that he may consider that option in the future if the volume is needed in the sedimentation pond. The pond is sized to handle the runoff volume.

The plans indicate one undisturbed diversion is planned for the minesite, Section 732.300, Plates 7-2 and 7-5, shows the undisturbed culvert UC-1 will be placed in the Right Fork of Lila Creek to divert undisturbed drainage under the sedimentation pond.

Disturbed diversions will consist of berms, culverts and ditches and will be used to direct flows over the disturbed area.

Stream Buffer Zones

The Permittee has not addressed mining activity in buffer zones. Section 731.600, PAP and 731.612 indicate that no mining activities will take place within 100 feet of a perennial or intermittent stream. Section 731.612, PAP, requesting information for marking a stream buffer zone in the channels has not been addressed.

The Permittee needs to characterize all stream channels using monitoring to substantiate the classification. The Permittee needs to establish areas and provide protective barriers 100 feet from the channel for all intermittent and perennial streams.

Sediment Control Measures

The Permittee has proposed plans to control sedimentation from the disturbed area. The Permittee has plan shows the sedimentation pond constructed in the channel of the Right Fork of Lila Canyon Wash. Placing the sedimentation pond in the wash, rather than on the pediment above does not minimize the disturbance as stated under R645-301-731. According to the proposed plans there is sufficient area on the pediment for a sedimentation pond without disturbing the channel. The Permittee should identify the need to disturb the channel when mine plan changes can eliminate disturbance to the channel. Siltation structures.

The Permittee proposes to use siltation structures and silt fences below the fan portal to control and treat runoff from the site.

Sedimentation ponds.

A sedimentation pond is planned for the minesite. The sedimentation pond location, design plans and cross-sections are provided on Plates 7-5 and 7-6. Design calculations are provided in Appendix 7-4.

An evaluation of the surface area maps (as an example, Plate 7-5) identified unused areas in the mine permit area that could allow the Permittee to minimize surface disturbance and impacts. The Permittee has developed mine plans that place a sedimentation pond and a large 60 inch diversion culvert (UC-1) in the channel south of the mine pad. The surface area of the disturbed area shows there is plenty of area to move some of the operations and minimize disturbance to the stream channel. The topsoil stockpile could be moved to one of the undisturbed areas on the map. That would leave an area to develop the sedimentation pond on the proposed disturbed area without operating in the channel. The truck turn-around could also be extended into the undisturbed area shown on the map, which would increase the radius of the turn for safety, and also remove the need to place the road next to the stream channel. Both of these moves would reduce disturbance the existing channel. Reclamation would also be easier facilitated, since there would not be the threat of storms washing away the reclamation work. The Permittee will be required to justify the design and surface facilities to minimize disturbance to the drainage channel south of the mine pad area.

The Permittee shows the undisturbed drainage area,UA-4, which drains into the sedimentation pond. The pond is designed to treat the volume of runoff from the area. Plate 7-2 shows the drainage area and Plate 7-6 shows the design of the sedimentation pond. Neither plate identifies the discharge point from UA-4 or erosion protection for flows entering the pond. The Permittee will be required to submit this information, along with erosion design plans.

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Siltation Structures: Exemptions

The Permittee has requested no exemptions for siltation structures nor has the Division granted any.

Discharge Structures

Two discharge structures are planned for the mine. A sedimentation pond will contain and treat disturbed area sediment. The Permittee has identified that mine water would be discharged to Lila Canyon Wash, Section 731.513. The Permittee calls Lila Canyon Wash the North Fork of Coleman Wash. Plate 7-5 also indicates that mine water will be discharged to Lila Canyon Wash. The Division has assessed groundwater information from what has been presented in the PAP and other mines in the Book Cliffs. The Division has determined there is a good probability that water will be intercepted and pumped from the mine. Again the Division requires the consolidation of discharge points to one receiving stream channel to lessen the impacts to receiving stream channels, which could occur if large amounts of flows are introduced into the unconsolidated channels.

Impoundments

The Permittee proposes to construct only one sedimentation pond, which will be located in the southwest corner of the disturbed area (See Plate 5-2). The sedimentation pond will have a maximum storage capacity of 12 acre-feet and a height of 11 feet. Therefore, the pond does not meet the criteria for an MSHA pond and will not need to be regulated as such. A registered professional engineer certified the sedimentation pond design.

In Appendix 5-5, the Permittee shows the results of the static safety factor analysis. The lowest safety factor of the embankments is 2.35 for the slopes under saturated conditions, which exceeds the requirement of 1.3. The Permittee did include the analysis of the physical and engineering properties of the foundation materials.

The Permittee states in Appendix 5-5 that the pond is protected against sudden draw down. The analysis shows that the pond will be safe under sudden draw down conditions. The safety factor calculated in the analysis is 2.02. A safety factor of 1.0 is considered safe under rapid draw down conditions; therefore, the Permittee meets the regulatory requirements.

The Division of Water Rights also looked at and approved the sedimentation pond design. The Division has a copy of the approval letter.

The elevation of the emergency spillway is 5841 feet while the top of the embankment will be 5843 feet, with a freeboard of 2 feet and a volume of 2.36 ac-ft. The freeboard will resist overtopping by waves and by sudden increases in storage volume.

The outslopes of the sedimentation pond will be planted with an approved seed mix to help prevent erosion and promote stability. No highwalls are associated with the impoundment.

The application discusses treatment facilities around the fan portal. The small disturbed area will be treated using silt fences and a berm to control and contain the expected runoff of 0.06 acre-feet for the 10-year, 24-hour design precipitation event.

The Permittee will inspect the sediment pond according to the requirements of R645-301-514. A professional engineer has certified the pond designs according to the requirements of R645-301-512.

Findings:

R645-301-731, The Permittee shall evaluate the probable impacts from mine discharges and sedimentation pond discharges on receiving channels **before** mining. The Permittee will assess the level of impact contaminants such as dissolved salts, toxic elements (such as boron and selenium), and channel sediments will cause downstream of the permit area to the Price River. The Permittee will submit plans for the mine-water discharge system **before** mining. The plan will specify pipe size to handle at least 500 gpm, routing, discharge area and designs for erosion control at the discharge area. A model using mine water discharges ranging from 0 to 500 gallons per minute shall be evaluated to determine the potential of impacts to the Price River and the fishery. In the PHC, the Permittee shall describe the probable impacts from mine water discharges impacting the Price River and fishery from high mine water discharges, chemical and sediment contamination.

R645-301-731, The Permittee will consolidate discharge points by routing mine water through the sedimentation pond or, if meeting UPDES limits discharging in the same area as the sedimentation pond discharge. This action should reduce impacts to stream channels and reduce monitoring and reporting of data.

R645-301-731, (1) The Permittee will submit design plans for a sedimentation pond to contain and control the runoff from the mine pad area for treatment of the 10 year-24 hour precipitation event falling on the mine pad and treatment of at least a 500 gpm mine water discharge. **(2)** The Permittee will submit design plans of the sedimentation pond showing the discharge area and erosion protection structure for the undisturbed area UA-4 entering the pond.

R645-301-731, Prior to mining, the Permittee will be required to assess the channel morphology and characteristics of channels downstream from proposed UPDES monitoring sites. The Permittee is required to assess the potential impacts of mine

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water discharges to downstream channels from the discharge site to the Price River. In the PHC, the Permittee will describe the impacts to downstream channels.

R645-301-731, The Permittee shall evaluate and describe all mining activity within 100 feet of a perennial or intermittent stream channel.

R645-301-121.200, It states in Section 731.211 that there is a total of 17 ground water monitoring sites proposed for this property, and refers to Table 7-3. Including mine-water discharge at L-5-G and the IPA piezometers, Table 7-3 shows only 13 ground-water monitoring sites. This needs to be clarified.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The Permittee refers to the new support facilities in the following sections of the PAP: Section 520, Plate 5-2, the appendices of Chapter 5, and in the bond calculations. Appendix 5-4, New Facility Design, shows the design for the roads and sewage system. Appendix 5-7 has the designs for the refuse pile. The new structures and facilities listed include:

Building

- Office/Bathhouse
- Shop Warehouse
- Security Shack

Utilities

- Mine Substation
- Power Lines
- Power Poles
- Water Treatment Plant
- Potable Water Tank
- Process Water Tank
- Sewer Tank & Drain Field

Mine Facilities

- Ventilation Fan
- 60-inch Conveyor from tunnels to Coal Stockpile
- Run of Mine (ROM) Underground Belt from Stockpile to Crusher
- 48-inch Conveyor from Crusher to Loadout Bin

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- 48-inch Conveyor from Loadout Bin to Truck Loadout
- Reclaim Tunnel, Escape Tunnel, Fan, and Fan House
- ROM Storage Pile
- Crusher Screen Plant
- Truck Scale and Loadout
- Coal Loadout Storage Bin
- Coal Stacking Tube
- Culverts (Note: names, diameter and length must be included)
- Guardrails
- Underground Pipes
- Chain Link Fence

Support Facilities

- Non-Coal Waste Area
- Equipment & Supplies Storage Area
- Topsoil Pile
- Refuse Pile
- Sediment Pond
- Slope Access Road
- Rock Slopes
- Mine Facilities Road
- Truck Loadout Road
- Portal Access Road
- Office/Bathhouse/Warehouse Asphalt Parking Area
- Mine Parking
- Fuel Tanks
- Rock Dust Bins
- Explosive Magazines

The Permittee failed to show the location of each structure on Plate 5-2. For example, the Permittee did not show the location of the explosive magazines or power lines. To avoid this mistake the Permittee must give each structure a number. The Permittee must list the numbered structures in the engineering section of the PAP, on the surface facilities map, and in the bond calculations.

Plate 5-8 is a detailed map with cross-sections that shows the coal handling facilities. Those facilities consist of a truck loadout, a scale, a 48-inch conveyor from the loadout bin to the truck loadout, a 48-inch conveyor from the loadout bin to the crusher, a 48-inch reclaim conveyor, a stacking tube, and a 60-inch conveyor from the mine.

The Permittee will construct the buildings, support structures, and mine facilities using standard building materials such as steel, wood and concrete and will use standard construction techniques for the construction and demolition of the facilities. The Permittee will accomplish

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reclamation of the surface facilities by removing the structures. When possible, they will salvage machinery and steel building components. The Permittee will ship all building debris, with the exception of concrete, off site

The Permittee is required to construct and maintain support facilities to:

- Control or prevent erosion, siltation, water pollution, and damage to public or private property.
- Minimize damage to fish, wildlife, and related environmental issues such as minimizing additional contributions of suspended solids to streamflows.
- Minimize damage to oil, gas, and water wells; oil, gas, and coal-slurry pipelines; railroads, and other utilities.

All support facilities will be located within the disturbed area. Runoff from the disturbed area will report to the sedimentation pond for treatment before being discharged. For additional details on erosion, siltation, and water pollution see the Hydrology section of this TA. Fish and wildlife issues are discussed in detail in the Fish and Wildlife Protection Plan section of this TA.

Findings:

The information provided does not meet the minimum acceptable requirements of the Regulations. Prior to approval and in accordance with:

R645-301-526.220, R645-301-521.161, R645-301-521.190 and R645-301-300.121.200,
The Permittee must show the location of each surface facility on Plate 5-2, or an equivalent map. To avoid confusion and to insure that all surface facilities and utilities are shown the Permittee will number all facilities and utilities, a list of the numbered facilities and utilities will be shown in the engineering section of the PAP, on Plate 5-2 and in the bond calculation section of the PAP.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

The Permittee committed to place signs and markers as required by the Utah Coal Rules. Those Rules require that signs and markers for underground coal mines:

- Be posted, maintained, and removed by the person who conducts the coal mining and reclamation operations.

- Be of a uniform design that can be easily seen and read, be made of durable material, and conform to local laws and regulations.
- Be maintained during all activities to which they pertain.
- Be displayed at each point of access from public roads to areas of surface operations and facilities on permit areas.
- Show the name, business address, and telephone number of the Permittee who conducts coal mining and reclamation operations and the identification number of the permanent program permit authorizing coal mining and reclamation operations.
- Be maintained until after the release of all bonds for the permit area.
- Clearly mark the perimeter of all areas affected by surface operations or facilities before beginning mining activities.
- Be erected to mark buffer zones as required under R645-301-731.600 and be clearly marked to prevent disturbance by surface operations and facilities.
- Be erected to mark where topsoil or other vegetation-supporting material is physically segregated and stockpiled as required under R645-301-234.

Findings:

The Permittee has met the minimum requirements of the signs and markers section of the regulations.

USE OF EXPLOSIVES

Regulatory Reference: 30 CFR Sec. 817.61, 817.62, 817.64, 817.66, 817.67, 817.68; R645-301-524.

Analysis:

R645-301-524.220 allows the Permittee to submit a specific blasting plan separate from the PAP. The Permittee has opted to submit a detailed blasting plan if and when they propose to blast.

Findings:

The Permittee has met the minimum regulatory requirements for the use of explosives.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

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Analysis:

Affected Area Maps

To depict areas of potential impacts from surface water discharges via the sedimentation pond and mine water discharges the Permittee should submit affected area maps showing the named drainages and monitoring sites of the Price River drainage from the permit area to the Price River. To depict the area of any potential impacts from mining to Range Creek, maps should be submitted showing the surface water features of the permit area and Range Creek drainage.

Plate 1-1, Permit Area Map, shows the location of the entire Horse Canyon Permit area. The area includes permit area A, which is the Horse Canyon project, and permit area B, which is the Lila Canyon Extension. The map does not show any areas of potential future expansion. In the past, the Permittee has indicated that they might seek additional reserves to the south. In addition, the Permittee has indicated that they could expand the disturbed area to a discharge point. The permit section of the environmental part of this TA addresses those deficiencies.

Mining Facilities Maps

Plate 5-2 shows the surface facilities for the Lila Canyon Extension. The Division has reviewed the facilities and structures list and found that the Permittee did not include all of the facilities mentioned in the PAP on Plate 5-2. The Permittee must show all surface facilities and structures on Plate 5-2. The operation section of this TA addresses this deficiency.

With the changes required for the sedimentation pond, mine water discharge pond, and undisturbed culverts; the Permittee will need to submit new facilities plans.

The operations maps are not accurate and the Permittee needs to correct them. For example, on Figure 1 of Appendix 5-7 the Permittee mislabeled some elevations: at station 8+00, the correct elevation is 5895 instead of 5898. The map shows the accuracy of the elevations to the nearest 1,000th of a foot. It is impossible to measure such accuracy in the field.

At station 6+00, the Permittee shows the grade during operations as 5 degrees. However, the map shows the shop/warehouse located on station 6+00, so that area would be flat. In addition, the Permittee committed to placing 4 feet of material over the fill (rock slope material) before constructing buildings. However, the cross-sections do not show the rock slope material covered with any material.

On Plate 5-7A-2, at station 6+00, the Permittee also shows that the shop/warehouse will be on a slope instead of flat ground. In addition, the Permittee does not show in the legend what the red hash marks mean.

Mine Workings Maps

The Division discussed the known abandoned and inactive workings in the Environmental Section of the TA. The Division found that the Permittee did not discuss all known abandoned mine workings in the area.

In this section the Division will discuss the proposed mine workings for the Lila Canyon section of the permit area. Plate 5-5 shows the projected mine workings for the Lila Canyon Extension. The only openings are the two rock tunnels and the ventilation portal. The Permittee shows the timing and sequence of the mining operation on the map.

Monitoring and Sampling Location Maps

Operational ground-water and surface-water monitoring sites are listed in Table 7-3, and locations are shown on Plate 7-4. The proposed surface-water monitoring program was established to collect data around the Lila Canyon Extension both above and below the disturbed site at L-1-S, L-2-S, and L-3-S. The sedimentation pond discharge point, L-4-S, and the potential mine discharge point, L-5-S, will be monitored in accordance with UPDES permit requirements. Current UPDES discharge points UT040013-001A and -002A are also shown on Plate 7-4. Locations of seep and spring ground-water monitoring sites L-6-G through L-17-G and piezometers IPA-1, -2, and -3 are shown on Plate 7-4.

Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-521.150, The Permittee must show the correct surface elevations and configurations on all operational maps. The Permittee must show how they will cover the refuse pile with fill before construction of the buildings. In addition, the Permittee must show that the area where they will construct buildings is flat.

R645-301-521.150, and R645-301-121.200, To avoid confusion the Permittee should not show elevations to the nearest 1,000th of a foot. See analysis section for more details. In addition, the Permittee must label the red hash marks on cross-section 5-7A-2 and similar maps and cross-sections.

R645-301-731, The Permittee shall provide updated facilities maps to show the change in sedimentation pond location, change of the mine discharge system, sedimentation-pond discharge system, disturbed area drainage reconfiguration, and UPDES discharge structures.

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R645-301-731.600, The Permittee shall submit maps depicting a 100-foot buffer zone along perennial and intermittent channels.

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GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

Section 241, 242, and 243 discuss topsoil and subsoil redistribution. Appendix 5.7 describes reclamation of the refuse pile. Appendix 5.8 describes the reclamation of the remaining area and divides the 48.23acre site into two reclamation units based upon slope. The upper unit is a water treatment area and portal pad, approximately 3.4 acres. The lower unit is 37.37 acres.

Findings:

Information provided in the application meets the minimum General Reclamation Plan requirement of the regulations.

POSTMINING LAND USES

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

Analysis:

The postmining land uses will be the same as premining land uses. This will be accomplished through the reclamation plan presented in other sections of the application. Support activities to achieve the postmining land uses will include site monitoring; remedial actions, such as regrading, reseeding with species native to the area, and replanting; and fencing as necessary to restrict access and grazing. No roads will be left in the disturbed area. These actions will make the area compatible with any future wilderness designations.

SUWA commented that the restoration plan is inadequate to ensure that the water sources and other wildlife habitats will be returned to the postmining land use. Additional information is requested in other sections of this TA to address reclamation and the postmining land use.

SUWA commented that the PAP fails to restore the land to a quality capable of supporting wilderness designation. The BLM's response to public comments in the January 2002 document titled *Revisions to the 1999 Utah Wilderness Inventory* addresses questions and concerns raised during the initial wilderness scoping project that began in March of 1999. The BLM received public comments concerning the Turtle Canyon and Desolation Canyon Inventory Units. Many of these comments questioned the wilderness character determinations made in the *1999 Utah Wilderness Inventory*. Questions concerning: impact from surface structures due to past mining; access for water monitoring; areas degraded due to coal mining activities and drill stem pipes. The BLM response was that the impact associated with past mining activity was found substantially unnoticeable. Accesses for water monitoring sites were determined to be vehicle ways, and not roads because they are not maintained nor do they receive regular use.

The postmining land use is in accordance with the BLM's management plans. Appendix 4-2 contains a letter from the BLM stating the postmining land use for the area is wildlife habitat, grazing, and incidental recreation, not "wilderness character".

Findings:

Information provided in the application meets the minimum Postmining Land Uses requirement of the regulations.

PROTECTION OF FISH, WILDLIFE, AND RELATED ENVIRONMENTAL VALUES

Regulatory Reference: 30 CFR Sec. 817.97; R645-301-333, -301-342, -301-358.

Analysis:

The application says the sediment pond will be maintained through the life of the operation and will be removed when effluent criteria are met after reclamation. Sections 761 and 763.100 indicate the sediment pond will remain in place until the stability and vegetation requirements for Phase II Bond Release are met and that this will be a minimum of 2 years after the last augmented seeding.

The species in the seed mixture will potentially provide good forage and cover for wildlife. The pinyon/juniper area will be reclaimed to a grass/shrub community; this could enhance the quality of habitat in the area if some of the pinyon/juniper areas, shown as undisturbed, remain undisturbed.

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Findings:

Information provided in the application meets the minimum Protection of Fish, Wildlife and Related Environmental Values requirement of the regulations.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

The definitions of Approximate Original Contour (AOC) are contained in the Surface Mining Control and Reclamation Act (SMCRA) and the Utah coal rules. The objectives of post-mining backfilling and grading is to return the site to a configuration resembling the topography of the land prior to mining and to blend the site into the drainage pattern of the surrounding terrain. At the same time, the Permittee must meet reclamation performance standards, including controlling erosion; establishing mass stability; and establishing permanent, diverse, and effective vegetative cover.

The Division's Technical Directive 002 is intended to reconcile the specific performance standard requirements of the regulatory program with the general definitions of AOC in a way that accomplishes the objectives of SMCRA.

Final Surface Configuration

The Permittee did not request a variance from AOC. The Division reviewed all the premining and postmining topographic maps and cross sections and determined that the postmining topography, excluding elevation, closely resembles its premining configuration based on the following:

- The premining topography shown on Plate 5-1A is similar to the postmining topography shown on Plate 5-6. The main differences between the premining and postmining topography is that the postmining contours are smoother. However, pocking and other surface roughening techniques tend to make the postmining surface look more natural after a few years.
- The cross-sections shown on Plate 5-7A-1 through Plate 5-7A-4 show that premining and postmining contours will be similar. The major changes will occur in the area of the main mine facilities. The area in and around the reclaimed refuse pile will be higher than the premining topography. The area in and around cross-section 4+00 to 12+00 will have smoother postmining contours.

- Figure 2 of Appendix 5-7 shows detailed cross-sections of the premining and postmining refuse-pile area. The reclaimed refuse pile will be a slight mound. The mound will not impound any water. See the profile on Figure 1 of Appendix 5-7 for details.
- The Permittee shows premining and postmining cross-sections on Plate 5-7B-1 through Plate 5-7B-3. The Permittee will leave a small cut slope from the road embankment as shown in cross-section 16+00. The concrete disposal area will be a slight mound as shown on cross-section 18+00.
- Three critical areas for final surface configuration are the portal areas. The Permittee is required to eliminate all highwalls. Plate 5-9 shows detailed cross-sections for all portal areas. The premining contours for the rock slope portals show the face up areas to be a cliff. Therefore, the Permittee is required to backfill the areas to form cliffs. The Permittee will construct the ventilation fan portal on a natural slope and restore it to the same configuration.

All Highwalls to be eliminated

The Permittee states the following in Section 553.120:

“Minor highwalls may be created with the development of the rock slope portals. Upon completion of mining, these entries will be sealed as per Closure for Mine Openings Appendix 5-6, and highwalls will be eliminated during the reclamation phase of the operation. During reclamation, suitable materials will be placed against the portals. This material will be shaped to eliminate the highwall and to bring the slope back to the approximate original contour.”

Plate 5-9 shows the premining, operational and postmining cross sections for all portals. The two portals that provide access to the mine via the rock tunnel will have highwalls or face-ups that are approximately the same height as the openings, which is 6 feet. The highwalls may be slightly taller because the Permittee may need to remove loose rock. Since the portal face up areas are in a nearly vertical cliff, the Permittee will eliminate the highwall by backfilling against the portal face-up.

The fan portal will have a 17-foot highwall. The Permittee will have to remove some of the cliff when they construct the fan facility, because it will be in a high cliff. After reclamation, the Permittee will backfill the highwall to the premining topography.

Safety is a major concern with highwalls. Since the Lila Canyon highwalls are in an existing cliff, the existence and reclamation of the highwalls will not create additional safety hazards. The steep cliffs above the two lower reclaimed portals will prevent people, livestock, and wildlife from traveling over the highwall areas. People, livestock, and wildlife traveling

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over the upper reclaimed highwall will face the same hazards as found on any other slope in the area.

Because the Permittee will restore the highwall areas to approximate premining topography, the Division finds that the highwall elimination plans meets the minimum requirements of R645-301-553.120.

Hydrology

The main concerns with hydrology are that the Permittee restore drainages, control sediment, and prevent hazardous and toxic discharges. The Division considers that the Permittee will meet those conditions when they meet the hydrologic reclamation requirements.

Findings:

The Permittee meets the minimum approximate original contour restoration requirements of the regulations.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

General

The AOC section of this TA discusses AOC and highwall elimination issues in detail. No spoil piles will be associated with the site. No major depressions will be present after reclamation, see Plate 5-6, Post Mining Topography.

Slope Stability:

The slope stability requirements are in R645-301-553.130, which states that the postmining slope will not exceed either the angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and prevent slides. The reclaimed slopes at the Lila Canyon Extension site will meet the slope stability requirements because:

- The angle of repose for materials in and around the Lila Canyon site is approximately 35°, a 1.5h: 1v slope. The steepest reclaimed slope is the upper portion of the slope near the fan portal, and that slope will not exceed 35°.

- The Permittee may leave some minor cut slopes along the reclaimed road after reclamation (see cross-section 16+00 on Plate 5-7B-1). Before the Division approves cut slope retention, the Permittee must explain why the cut slope must stay. In Section 553 of the PAP the Permittee states

“Some minor cut slopes along the reclaimed road may be left after reclamation due to the difficulty and inability to reclaim all material pushed over the side while making the road cut. See plate 5-7B-a cross-section 16+00 for details. UEI will make reasonable efforts to minimize the cut slopes being left.”

On cross-section 16+00 the Permittee shows that the cut slope will be reclaimed by placing material on the exposed slope. Due to the steepness of the slope, any attempt to completely backfill the cut slope is impractical. The Permittee needs to discuss the issue in more detail. For example, if the Permittee could show that slope stability requirements could not be met if the cut slope were backfilled, or that the exposed cut was in rock, and therefore stable, the Division could determine it allowable to leave the slopes.

- The safety factor calculations for the reclaimed slopes are in Appendix 5-5. The reclaimed slopes that the Permittee analyzed will have a minimum static safety factor of 4.8 under dry conditions and 3.1 under saturated conditions.
- A registered professional engineer has prepared the backfilling and grading plan. The engineer designed the plan to ensure that the slopes would be stable and resistant to slides. By keeping the slope angle less than the angle-of-repose and by having the safety factor greater than 1.3, slides will be prevented from occurring. Pocking the steep slope surfaces will prevent minor slide and surface slumping. Pocking interlocks the topsoil with the subsoil layers.

Post-Mining Land Use:

The post mining land-use finding is in the post-mining land use section of the TA. The reclaimed contours will be compatible with the post mining land use. The postmining land uses are wildlife habitat, grazing, and incidental recreation, which are identical to the premining land uses. The postmining land use is in accordance with the BLM's management plans. See Appendix 4-2 of the PAP for a BLM postmining land-use approval letter.

Settled and Revegetated Fills:

The variances from AOC and other requirements for existing spoil or underground development waste do not apply to the Lila Canyon Extension since those materials are not present on the site before permit issuance.

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Spoil Disposal:

Spoil is overburden removed during coal mining and reclamation. Overburden is all of the material that overlies a coal deposit, with the exception of topsoil. The only spoil that the Permittee will generate at the Lila Canyon Extension will be at the fan portal. The Permittee will use that spoil as backfill at the fan portal site. The proper compaction of spoil is a performance standard that the Permittee must meet during reclamation.

Disposal of Coal Mine Waste and Underground Development Waste:

The Division and Permittee consider the material from the rock slope tunnels to be coal mine waste; therefore, that material must be disposed of in a refuse pile. In addition to the rock slope material, mine development waste and reject material from the crushing process are also potential sources of coal mine waste.

The reclamation plan for the refuse pile is in Appendix 5-7. The refuse pile will meet the requirements of R645-301-553.250 because:

- The reclaimed slopes will meet the AOC requirements and will support the postmining land use. The Permittee will construct no terraces on the outslopes of the refuse pile. The grade of the outslopes will not be steeper than 3H: 1V; see Figure 2 of Appendix 5-7 for details.
- The Permittee will cover all refuse material with a minimum of 4 feet of material; see Figure 2 of Appendix 5-7 for details.
- The slopes in and around the reclaimed refuse pile will have very gentle slopes with a stability factor greater than 8 (see Appendix 5-7). The minimum safety-factor requirement is 1.3. Thus, the slopes of the reclaimed refuse pile are considered stable.

Exposed Coal Seams and Acid- and Toxic-Forming Materials and Combustible Materials:

The only exposed coal will be at the fan portal area. The cross section of the reclaimed fan portal on Plate 5-9 shows that the coal seam will be backfilled by more than 4 feet of fill materials.

Previously Mined Areas

There are no known previously mined areas in the disturbed area boundaries for the Lila Canyon site.

Special Provisions for Steep Slope Mining

Neither backfilling and grading on steep slopes, nor special provisions for steep slope mining are considered for this TA because Lila Canyon Extension area is not considered a steep slope mine. Special provisions for steep slope mining apply when the Permittee plans to get a variance from AOC requirements. Since the Permittee did not apply for an AOC variance, they are not required to address these requirements.

Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-553, The Permittee must describe the location of cut slopes that will be left after final backfilling and grading. The Permittee will also explain why those cut slopes will be left. For example, the Permittee could discuss stability issues (see analysis section for details).

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

The Permittee committed in Section 529 of the PAP to seal all underground openings when no longer needed. See Appendix 5-6 for the portal-sealing plan. The portal-sealing plan meets Division and MSHA requirements. In addition, the Permittee will seal all wells when no longer needed.

As part of the performance standards, the Division will require the Permittee to barricade and fence mine entries that are temporarily inactive in the permit area. The Permittee must post warning signs around the entries and periodically inspect and maintain the barricades.

Findings:

The Permittee meets the minimum mine openings requirements of the regulations.

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TOPSOIL AND SUBSOIL

Regulatory Reference: 30 CFR Sec. 817.22; R645-301-240.

Analysis:

Redistribution

The PAP describes in Section 241 grading the surface to AOC, replacement of subsoils in the root zone, ripping, replacement of topsoil, replacement of boulders and gouging and treatment of the surface with an inoculum.

The grading sequence is itemized and begins with:

- “a. Grade all areas where no subsoil is being stored.
- b. Replace subsoil on areas from which it was removed.”

SUWA commented that the sequence as written was very confusing. The Permittee has provided Plate 2-3 outlining Soil Salvage and Replacement. Crucial to the understanding of steps a and b in the regrading is an As-Built map committed to under Section 232.500 that will locate the subsoils determined to be suitable for placement in the top four feet rooting zone at reclamation, i.e. subsoil from soil map units SBJ, DSH and VBJ identified in the Order 1 Soils Survey. This proposed As-Built map is referred to in the discussion of Section 241 and 242.100.

SUWA commented on the depth of topsoil replacement, believing that the PAP called for eighteen inches of topsoil to be replaced over the entire site. Section 242.100 describes the replacement of topsoil to approximate the variable depth of topsoil encountered at the site during the Order 1 Soil Survey (see Plate 2-3 Topsoil salvage and Replacement). Section 242.100 also outlines the equipment to be used to replace the topsoil.

Inoculum is referred to in Section 241 and soil amendments are referred to in Section 243. The inoculum will stimulate microbial activity in the soil. Re-establishment of biologic soil crusts will be attempted on the surface of the topsoil storage pile (Section 231.400). If successful, this source of biologic soil crusts will be utilized to inoculate the reclaimed site (Section 244.200). At the time of reclamation more options for cryptogam re-establishment may be available. For example, the U.S. Army Corps of engineers is experimenting with cyanobacteria pellets, which may be commercially available in two years (see <http://www.cecer.army.mil/td/tips/product/details.cfm?ID=527>).

Amendments will replace lost soil nutrients based upon testing of the topsoil stockpile prior to redistribution. Grab samples will be collected to a depth of 18 inches from the stockpile and analyzed for Nitrogen, Potassium, and Phosphorus (Section 243) The Division would rather that the bottom and middle portions of the pile are sampled to see what the effects of darkness, compaction, and sterility have been on the fertility of the topsoil stockpile. Appendix 5-8

indicates fertilizer application to the reclaimed surface will be based upon the testing of the topsoil.

In past reclamation, the Division has noted that the application of nitrogen was a detriment to the encouragement of native species.

Findings:

The information provided in the application is adequate for the purposes of the Regulations with the following exception. Prior to approval and in accordance with:

R645-301-243, The PAP should indicate that sampling of the stored topsoil will be from the middle and bottom of the stockpile.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

Reclamation

The Permittee has committed to reclaim all roads, including the removal of culverts in the disturbed area, with the exception of the County Road. The Permittee will remove and bury the road surfaces (road base gravel) on site and cover them with a minimum of two feet of material. They will bury concrete under four feet of material. The Permittee does not currently propose to asphalt any surfaces. Should that change, they will remove all asphalt and ship it offsite to a landfill or recycling center.

Retention

The Permittee states in section 642.600 of the PAP that there will be no roads left in the disturbed area after reclamation with the exception of the portion of the County road that lies within the disturbed area boundary. The Permittee needs to state how they will modify the culvert under the road and the embankment next to the road after the sediment pond is removed.

Findings:

Information provided in the PAP is not adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

RECLAMATION PLAN

R645-301-534, The Permittee must state how they will modify the county road that lies within the disturbed area boundary during reclamation. Specifically, the Division wants to know how the Permittee will modify the culvert, and how the surface will be stabilized

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Analysis:

Hydrologic Reclamation Plan

The Permittee has submitted reclamation plans for the current PAP. Design changes in hydrologic structures outlined in the operation section will require changes in the reclamation plan. The Permittee needs to be specific in describing the reclamation procedures.

Findings:

R641-301-761, The Permittee shall submit reclamation maps to conform to the changes identified in the technical analysis.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General

No areas have been designated for contemporaneous reclamation. The entire site will be restored to approximate original contour at final reclamation. Incidental disturbances will be revegetated with an interim seed mix. Table 3.4/3.5 is a seed mix that will be used for both interim and final revegetation.

Findings:

The information provided is adequate for the purposes of the Regulations.

REVEGETATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.111, 817.113, 817.114, 817.116; R645-301-244, -301-353, -301-354, -301-355, -301-356, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

Revegetation: General Requirements

It is vital for plants to have adequate soil rooting depth. Studies of plant phenology have clearly shown plants in arid areas use soil water from increasing depths as the growing season continues, and if there is inadequate rooting depth, production and vegetative cover will decrease.

Any soils not salvaged and protected are subject to contamination from mine operations, compaction, and mixing with unsuitable materials. Some of the deeper subsoils, below the roots, have very high (>65%) rock contents, and some are derived from marine shales that could severely limit vegetation establishment and growth. If these materials were in the rooting zone, it would be difficult or impossible to achieve revegetation success.

Following topsoil redistribution, the soil will be tilled until large clods on the surface are diminishing. Tilling the soil to reduce the number and size of clods has not been necessary at other Utah mines because clods are broken up as the soil is redistributed.

Surface preparation will include gouging on the contour (Sec. 341.220) to minimize the potential for erosion and to enhance vegetation establishment. Because of the limited precipitation, the Division considers surface roughening essential at this site. In conjunction with roughening, the track hoe can cast any vegetation, dead trees, and large rocks back onto the reclaimed surface (App. 5-8). This debris provides solar protection but also increases available moisture in small areas and increases topographic and vegetation diversity.

The seed mixture for final reclamation is shown in Table 3.4/3.5 and consists of 19 area native species. The BLM signed the Federal Native Plant Conservation Committee Memorandum of Understanding that recognizes the benefits of native plants and promotes the reestablishment of native plants. Thus, the landowner would likely be in agreement with such changes. The operator agrees to use noxious weed free seed.

The seed mixture does not replace the diversity found on site. The seed mixture must be modified to increase diversity (R645-301-342.230 and R645-301-353.120). Some suggestions are:

- Replace green rabbitbrush with Mormon tea.

RECLAMATION PLAN

- Add to the mix:
 - birchleaf mountain mahogany
 - greasebush
 - yucca spp.
 - white evening primrose
 - thicketleaf penstemon
 - sulfur flower buckwheat.

The seeding rate shown in Table 3.4/3.5 is about 165 seeds per square foot. This rate is about 1.65 times higher than the rate recommended by the *Interagency Forage and Conservation Planting Guide for Utah* and *The Practical Guide to Reclamation in Utah*. Reduce the seed rate when developing the adjusted seed mixture. Also, reclassify fringed sage as a shrub rather than a forb (see Table 3.4/3.5; R645-301-121.200).

Using transplants in a 9-inch precipitation zone is desirable and necessary to achieve the success standards required. Bareroot or containerized seedlings may be planted by the Permittee. After two years following seeding, if it “appears that woody plant density is lacking”, the Permittee plans to supplement with seedlings (App. 5-8). The application gives adequate details of when and how seedlings will be planted. The map mentions that BLM and DWR will determine the ratio and species appropriate for the postmine landuse. Remove the comment concerning species and ratios will be determined by the BLM and DWR (R645-301-121.200). Provide a tentative list of species and ratios and submit in Chapter 3 of the PAP (R645-301-341.210; R645-301-353; R645-301-356.210; R645-301-356.231).

Following earth moving and recontouring, the Permittee will apply seed, fertilizer, hydromulch, and tackifier to the site. Chemical analysis of the soil will determine the final recommended fertilizer rate. Currently, the recommended fertilizer rate is 100 lbs/ac of 16-16-8. A hydroseeder will apply the seed and fertilizer to the site on days with low wind velocities. It is not suitable to include fertilizer with seed during hydroseeding operations.

The Permittee will apply 2,000 lbs/acre of hydromulch and 100 lbs/acre dry-base tackifier. The reclamation plan does not include plans for irrigation. The Division does not anticipate the necessity to irrigate as long as water-harvesting methods are used.

SUWA commented that the Permittee should not use lethal means of control for weeds and wildlife. The PAP states that “no use of pesticides or chemical that have serious consequences to plants or wildlife will be used...unless recommended by a regulatory agency...” (pg. 18; sec. 333.200). If the Permittee determines that pesticide control of any kind is necessary, the proposed plan must be approved by the Division and incorporated into the MRP (see 301-357.301). At present, there are no plans in the MRP that specifies pest or disease control measures. The Division is not currently aware of pest problems in the area. It is not anticipated to implement pest control measures, except possibly chemical use after reclamation for the control of state listed noxious weeds.

Section 357.301 states the Permittee would like to reserve the right to apply for augmentation of reclaimed areas, thus extending the bond liability period on a site-specific case scenario. This statement is acceptable but unnecessary. The regulations in R645-301-357 are designed to allow a limited amount of reseeding and other work for specific purposes without lengthening the extended liability period.

Revegetation: Timing

Table 3-3 in Chapter 3 is a general reclamation timetable. According to this timetable, seeding and mulching will begin about October 1, depending on the weather. Seedlings will be planted about November 1. Except as discussed below, these are the normal times for planting, and the schedule is acceptable.

Blue grama and galleta are two of the dominant grasses in the area proposed to be disturbed, and they are both warm season grasses. Other mines in Utah have found it difficult to establish these species on reclaimed sites, and this may be because they are often seeded in the fall. Mines in New Mexico and Arizona usually seed these species in the summer to take advantage of late summer rains, but, to the Division's knowledge, no Utah mines have attempted to establish these species by planting them in the summer.

The Permittee has committed to establish demonstration plots to test whether summer seeding will increase establishment of the warm season species (pg. 26; sec. 354). The proposed demonstration plot plan includes:

- Implement the demonstration plot on the sediment pond.
- Divide the test plot in two study areas:
 - West side: receives the warm season species.
 - East side: receives the cool season species.

The Division commends the Permittee for conducting this study, but requires the following minor adjustment (R645-301-341.300). Divide the demonstration plot in four study areas:

- Northwest side: receives the cool season species.
- Northeast side: receives the warm season species.
- Southwest side: receives the warm season species.
- Southeast side: receives the cool season species.

This orientation may prevent skewed results because of solar orientation. As the plan reads now, the warm season species will receive only western exposure, which may negatively affect the results. With this commitment, the Division is willing to accept the plan to seed in the fall.

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Revegetation: Mulching and Other Soil Stabilizing Practices

The site will be mulched with 2000 lbs/ac of wood fiber mulch with 100 lbs/ac of a tackifier. Appendix 5-8 says 500 lbs/ac of wood fiber mulch and 100 lbs/ac of tackifier will be applied with the seed followed by application of an additional 1,500 to 2,000 lbs/ac of mulch and 100 pounds of tackifier. While Appendix 5-8 presents detail not included in Chapter 3, the Division considers the plans consistent.

Prior to disturbance, the area is currently stabilized, not only with vascular vegetation but also with biological soil crusts referred to as cryptogamic soil crusts. The use of mulch is only a temporary soil stabilizer. Reestablishing biological soil crusts is needed for long-term stabilization and plant community restoration. The Division recognizes the recovery rates for biological soil crusts are slow and will not occur completely within the period of extended liability; however, the Permittee can accelerate that recovery through best management practices (BMP) known at the time of reclamation. Some of the BMP we do know are to salvage the crustal organism as a separate layer and respread on the surface of the topsoil pile to allow photosynthesis. Biological soil crust organisms require moisture and prefer cool temperatures for growth. Other details are provided in the Soil Resources section of this TA.

The PAP states that if soil crusts form on topsoil stockpiles, then the operator will apply two ounces of sifted soil crusts to each load of Wood fiber mulch applied during reclamation. The soil section of this TA discusses concerns and suggestions to this planned procedure.

Revegetation: Standards For Success

This section cannot be fully addressed until confusing and contradictory statements in the PAP, as referenced above, are resolved.

The general requirement section states that the Permittee will revegetate disturbed areas according to the approved permit (pg. 25; sec. 353). The findings in previous sections thoroughly discuss required changes to the revegetation plan, e.g., diversity and seeding amount.

Comparison surveys and analysis conducted between revegetated and reference areas determines the success of revegetation projects. As stated above, the surveys in Appendix 3.2A have confusing and inconsistent sections. There are also concerns of the applied sampling techniques. Sampling techniques for Performance Standards must follow the Vegetation Guidelines (see R356.110).

The Division visited the reference area on March 26, 2003. Although the reference area apparently represents the vegetation at the disturbed sites, the reference area is close to the county road and the main entrance to the mine. The location of the reference area may be negatively impacted by coal fines, road dust, and road traffic. The effectiveness of vegetation for

approved postmining land use and extent of cover compared to the extent of cover of the reference area determines revegetation success. Any negative impacts to the reference area may confound statistical comparisons and analysis. The Division requires consultation with the Division to relocate the reference area prior to any surface disturbance. (R645-301-356.100).

The PAP states that tree and shrub stocking and vegetative ground cover will determine reclamation success. The Permittee will establish plant cover, woody plant density, and productivity at a minimum of 90% of the reference area. Parts of sections 356.230-.233 are confusing. The Permittee states that 1,500 woody plants per acre will establish the area, which this number is not documented in the PAP as approved by the Division (R645-301-356.231). “Minimum stocking and planting arrangements will be specified by the Division on the basis of local and regional conditions and after consultation with and approval by Utah agencies responsible for the administration of forestry and wildlife programs.” Sections 356.231-.233 refer to the Vegetation Inventory (App. 3-2A), but it is unclear where the intended information is located in the appendix (R645-301-121.200).

Section 357.320 is confusing and inaccurate. The uses of nurse crops are not known to be beneficial in precipitation zone of less than 14 to 16 inches and especially a 9-inch precipitation zone such as Lila Canyon. Provide an accompanying citation or remove the reference that Russian Thistle serves as a nurse crop to help shade undergrowth and stabilize soil (R645-301-131; R645-301-121.200; pg. 31; sec. 357.320). Also, clarify the repeated paragraphs from section 357.321 through 357.324 (R645-301-121.200).

Section 357.332 is confusing and incomplete. This section refers the reader to the “above” to find out about the animal control methods. It is unclear whether the reader is supposed to read about animal control in the “weed” section. Regardless, the “weed” section does not include topics on animal control. Clarify this section and include a discussion that the Division must approve animal control methods applied by the Permittee (R645-301-121.200 and R357.332).

Section 358.100 refers to Appendix 3-3, which contains a letter from the USFWS on threatened and endangered species. This letter provides a species list that is not current. Remove the letter in Appendix 3-3. Replace the list with a current TE species list as requested in Fish and Wildlife Resources section. This section also states that the environmental coordinator will identify possible TE species if they appear and “take what ever actions are necessary to safeguard both the species and its habitat”. The environmental coordinator must first report a finding of a TE species to the Division.

The Permittee states there are “no wetlands and / or riparian areas within the area of potential disturbance”. There are springs in the area that are considered habitats of high value for wildlife. The Permittee must address concerns about these springs (R645-301-358.400).

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There are many references in Performance Standards that direct discussion of certain matters to previous sections. For example, “ 353.210 This section is addressed in 353.100”. These matters, however, are not specifically discussed in referenced sections. Clarify these references and sections (R645-301-121). Below is a table that provides a list of these sections, a brief description of matters, and section where matters should have been discussed.

| SECTION | CONCERN | SECTION REFERRED TO YET CONCERN NOT ADDRESSED |
|----------------|---------------------------------------|--|
| 353.140 | Soil stabilization. | 353.100 |
| 353.210 | Post mine use. | 353.100 |
| 353.220 | Seasonal characteristics. | 353.100 |
| 353.300 | Quick plant growth. | 353.100 |
| 357.302 | Husbandry practices. | 357.301 |
| 357.303 | Husbandry practices. | 357.301 |
| 357.304 | Responsibility period. | 357.301 |
| | | |
| 358.200 | Section does not address nest taking. | - |

Findings:

Information provided in the application is not considered adequate to meet the minimum Revegetation requirements of the regulations. Before approval, the Permittee must provide the following:

R645-301-121, Provide the following changes to make the revegetation success standards of this PAP more clear and concise: **(1)** Reclassify fringed sage as a shrub rather than a forb (Table 3.4/3.5) **(2)** Remove the comment concerning species and ratios will be determined by BLM and DWR. (General Requirements) **(3)** Remove or provide citation for comments concerning Russian Thistle **(4)** Clarify the repeated paragraph from section 357.321 through 357.324 **(5)** Clarify section 357.332 on animal control **(6)** Clarify sections 356.231-.233 **(7)** Remove the letter in Appendix 3-3 **(8)** Clarify all the misguided references in this PAP. See specifics in the table provided in the Standards for Success section of this TA.

R645-301-341.210; R353; R356.210; R356.231, Provide the tentative seedling species names, planting rate, and ratios.

R645-301-341.300, Adjust the warm and cool season species test plot to include four “quadrants” instead of two.

R645-301-342.230; R353.120, The final reclamation seed mixture must be modified to replace the diversity found on site.

R645-301-356.231, Remove “1500 woody plant per acre” statements concerning establishment. The Division must consult with area agencies and authorize the stocking number.

R645-301-356.100, Consult with the Division to relocate the reference area prior to any surface disturbance.

R645-301-358.100, Discuss that the environmental coordinator must first report a finding of a TE species to the Division before any actions are taken.

R645-301-358.400, Address concerns listed in this regulation about habitat, specifically the springs.

STABILIZATION OF SURFACE AREAS

Regulatory Reference: 30 CFR Sec. 817.95; R645-301-244.

Analysis:

For this site, the Order 1 Soil Survey identifies microbial crusts on the surface of the soil. Microbial crusts stabilize the soil through protection of the soil from water and wind erosion.

The plan recognizes the need to re-introduce microbial life in Section 241, and specifies a method in Section 244.200. Section 244.200 indicates that if soil crusts form on the topsoil pile, they will be added to the wood fiber mulch application in an attempt to reestablish biologic soil crusts on the reclaimed soil surface.

The best technology for re-introducing cryptogams on a large scale is still a subject of research. The internet site www.soilcrust.org provides excellent references. Introduction of biologic soil crusts may be as simple as sprinkling the crushed organisms over the surface and irrigating as described by Jayne Belknap in the publication, “Cryptobiotic Soil Crusts: Basis for Arid Land Restoration (Utah),” Restoration and Management Notes 12:1 Summer 1994. The Permittee’s commitment to advancing this research is commendable.

Appendix 5-8 Reclamation and Enhancement Plan describes the means of soil stabilization including: gouging of the site to encourage a roughened appearance as shown in Figure 1; and placement of large rocks and boulders and vegetation; application of 500 lbs/acre wood fiber mulch and 100 lbs/acre of tackifier with seeding and then a second over spray of

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1500 – 2000 lbs/acre of wood fiber mulch with 100lb/ac of tackifier and 200 lb/ac of 16-16-8 fertilizer. Appendix 5-8 further describes the use of wood fiber mulch over topsoil.

In accordance with R645-301-244.300, rills and gullies that contribute to a violation of water quality or that disrupt the post-mining land use will be filled, regraded or stabilized.

Findings:

The information in the PAP meets the requirements of the Regulations with regard to stabilization of the soil surface and control of erosion and air pollution attendant to erosion.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

Plate 1-1, Permit Area Map, shows the affected areas for the Horse Canyon Mine. The areas include Part A, the Horse Canyon Project and Part B, the Lila Canyon Extension.

Bonded Area Map

The Division bonds for activities that will occur within the disturbed area boundaries. Several maps show the disturbed area boundaries, including Plate 5-2, Surface Area.

Reclamation Backfilling And Grading Maps

Several maps and cross-sections will be used during backfilling and grading. The general cross-sections are on Plate 5-7A-1 through Plate 5-7A-4 and Plate 5-7B-1 through Plate 5-7B-3. Cross-sections on Figure 1 and Figure 2 in Appendix 5-7 show the final backfilling and grading plan for the refuse pile. Plate 5-6 shows the postmining contours. Those maps are adequate to ensure proper backfilling and grading.

The Permittee will need to submit new reclamation maps with the changes identified in the operation plan concerning removal of the undisturbed drainage culverts and adjusting the sedimentation pond.

Final Surface Configuration Maps

Plate 5-6 shows the postmining contours for the disturbed area.

Reclamation Monitoring And Sampling Location Maps

The Permittee states that no manmade features will remain in the reclaimed area, except the 60-inch culvert section that will underlie the county road in the south fork of Coleman Wash.

Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-542, The Permittee will submit reclamation maps portraying reclamation at Phase I to illustrate the reclaimed surface area configuration after all mining structures are removed, and at Phase II to illustrate the reclaimed surface area configuration after all hydrologic structures are removed

BONDING AND INSURANCE REQUIREMENTS

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

Analysis:

Form of Bond

The Permittee did not submit a rider to the bond as part of the application. The Division allows the Permittee to submit a bond separately after the Division has determined the bond amount, which can be done only after the TA has been completed. Before the Division issues a permit, the Permittee must post a bond; see the requirements of R645-301-820. Upon receipt of the bond, the Division then makes a finding about whether or not the bond is in the proper form; see R645-301-860 for the requirements for the proper form of the bond. The Division cannot issue the permit until the Permittee has posted an adequate bond.

Determination of Bond Amount

The Permittee currently has a reclamation bond for \$2,809,000 in 2003 dollars. The bond for the Horse Canyon project is \$1,253,00 in 2003 dollars. The Permittee has posted \$1,556,000 for the Lila Canyon Extension additional area.

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The Division calculated the bond based on the structures listed in the PAP. Since the Permittee did not list all of the structures in the bond calculations, the Division cannot complete the bond calculations at this time.

The Permittee needs to include all costs associated with reclamation in the bond calculations. Items missing from the revegetation cost estimate include, but are not limited to, seedlings, and fencing.

The Division has received comments from SUWA about calculating reclamation costs for the repair of subsidence related damage. The reclamation costs would be used in determining the bond amount. R645-301-830.130 requires that the reclamation cost estimate take into account the probable difficulty of reclamation, considering such factors as topography, geology, hydrology, and revegetation potential. The Division bases the reclamation cost estimate on the Office of Surface Mining's Reclamation Cost Handbook. The handbook does not mention estimating subsidence repair costs. The reasons are: 1) the Permittee is assumed to be in compliance with all regulations including repair of subsidence damage at the time of bond forfeiture and 2) the damage amount is unknown at the time of bond calculation. Because subsidence is an expense that cannot be calculated beforehand, the Division assumes that such costs will be covered by the contingency factor.

The one exception to the "no bonding for subsidence" rule is for subsidence damage to State appropriated water rights that are damaged by subsidence, but not repaired within 90 days. See R645-301-525.550. Since no damage has occurred, or is expected to occur, to State appropriated water rights, the Division will not require the Permittee to include subsidence damage as a line item in the bond calculations.

The Division has received comments from SUWA about the use of outdated cost estimates and equipment handbooks. The Division calculated the reclamation cost using updated handbooks and cost reference manuals in 2001. Before the permit is issued, the Division will update the reclamation costs with the latest cost information.

Terms and Conditions for Liability Insurance

The Permittee is required to submit a certificate issued by an insurance company authorized to do business in Utah to demonstrate that the Permittee has a public liability policy in force for the coal mining and reclamation activities in the permit area. The policy will provide a minimum insurance coverage for bodily injury and property damage of \$300,000 for each occurrence and \$500,000 aggregate.

The Permittee has an ACCORD form in Appendix 8-2 and 8-3 from the Federal Insurance Company stating the policy limits. However, the policy expiration date is June 1,

2001. The information in the Division's insurance files shows that the policy was renewed and expired on June 1, 2002. The amounts of the policy are as follows:

- | | |
|---|-------------|
| • General aggregate limit | \$2,000,000 |
| • Products/completed operations aggregate limit | \$1,000,000 |
| • Advertising injury and personal limit | \$1,000,000 |
| • Each occurrence | \$1,000,000 |
| • Medical expense limit | \$10,000 |

The policy amounts are adequate to meet the minimum regulatory requirements.

The Permittee must maintain the policy in full force during the life of the permit or any renewal thereof, including the liability period necessary to complete all reclamation operations. The policy will include a rider requiring that the insurer notify the Division whenever substantive changes are made in the policy, including any termination or failure to renew. The ACCORD form, in Appendix 8-2 and Appendix 8-3, states that the issuing company will notify the Division at least 45 days before cancellation.

The Division has received some comments from SUWA about bonding/insurance for subsidence damage. The R645-301-890 rules only require insurance for bodily injury and property damage.

Before the Division issues an approval for the Lila Canyon Extension, the insurance policy will be analyzed to insure that it meets the minimum regulatory requirements.

R645-301-525.520 allows the Permittee to purchase premium-prepaid insurance policy to cover the cost of repairing or replacing subsidence caused damage to non-commercial buildings, dwellings, and related structures. Since no non-commercial buildings, dwellings, and related structures are located in the subsidence zone, the Permittee does not need to purchase subsidence related insurance.

Even if such structures were in the subsidence zone, the Permittee is not required to purchase subsidence insurance, but has the option to do so.

Findings:

Information provided in the proposed amendment is not adequate to meet the requirements of this section of the regulations. Before approval, the Permittee must provide the following in accordance with:

R645-301-830.140, The Permittee must list every proposed structure in the bond calculations, and all revegetation costs

CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

Analysis:

SUWA has raised concerns that there are insufficient data to prepare the CHIA. Data are available from federal, state, and a number of sources. The Permittee is not required to provide data unless none is available from other sources. The Division is not limited to information in the PAP in preparing the CHIA; however, it is anticipated that data in the PAP will undoubtedly be used along with other information in preparation of the CHIA.

SUWA has raised concerns that the discharge area for the regional aquifer is not identified. The potential for discharge from a regional aquifer will be considered in the CHIA.

The Division will provide an assessment of the probable cumulative hydrologic impacts (CHIA) of the proposed operation, and all anticipated mining, upon surface- and ground-water systems in the cumulative impact area. The CHIA will be sufficient to determine, for purposes of permit approval, whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area. The Division will use data and analyses from several sources, including those submitted by the Permittee in the Lila Canyon Extension PAP.

When sufficient information is supplied to describe the surface water quality, quantity, characterize the stream channels and identify the probable hydrologic consequences the hydrologists will draft a CHIA.